

TEACHER'S EDITION

BOOK 2

CALCULATOR WORKBOOK



STARTING POINTS IN MATHEMATICS

CURRICULUM

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To the Teacher

This workbook provides classroom-tested calculator activities for children in grades 4 to 6. The following guideline is suggested.

grade	up to page
4	20
5	41
6	62

The activities have been developed for use with a four-function calculator with algebraic logic and an eight-digit display. Several activities involve a constant feature. The addition constant is used on pages 1, 12, 25, and 30; subtraction on page 25; multiplication on pages 27, 37, 49, 52, and 54; and division on pages 45, 49, and 55. The percent key is introduced on page 56. Calculator memory is presented on pages 60, 61, and 62.

The activities are designed to teach children how to use the calculator and how to apply this knowledge. Algorithms are presented to develop an understanding of the step-by-step approach to achieving the correct result.

Strand Organization

Topic	Pages
Calculator Functions	1, 2, 8, 10, 13, 60, 61, 62
Numeration	1, 3, 4, 5, 6, 7, 12, 15, 21, 22, 23, 30, 31, 32, 41, 50, 54, 55
Adding	2, 3, 4, 5, 7, 9, 11, 13, 14, 15, 19, 20, 21, 22, 23, 24, 25, 28, 32, 33, 34, 39, 42, 50, 51
Subtracting	2, 7, 9, 13, 15, 19, 22, 24, 25, 28, 31, 33, 42, 50
Multiplying	8, 9, 13, 14, 15, 16, 19, 20, 26, 27, 28, 35, 37, 38, 39, 43, 47, 48, 49, 51, 52, 53, 54, 55, 56
Dividing	10, 17, 18, 19, 20, 28, 36, 39, 40, 41, 43, 44, 45, 46, 48, 49, 53
Decimals	12, 13, 14, 15, 30, 31, 32, 33, 40, 41, 50, 51, 53
Estimating	24, 26, 44
Order of Operations	57, 58, 59, 60, 61, 62
Measurement	20, 34, 35, 39, 53
Problem Solving	9, 11, 18, 19, 20, 28, 29, 33, 35, 36, 37, 39, 40, 43, 48, 51, 53, 62

CALCULATOR WORKBOOK

BOOK 2

TEACHER'S EDITION

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Printed in Canada.

C95357

ISBN 0-7702-0859-2

ABCDEFG • 0876543

Know Your Calculator

Turn your calculator on .

What does the display show? 0.

Press .

What does the display show now? 123.

Press the clear key .

What does the display show now? 0.

Always press to start a new exercise.

Press several times. Keep pressing until the display does not change.

How many 9's does the display show? 8

Print what the display shows. 99 999 999

This is the largest number your calculator can display.

Enter .

Print the numerals that were displayed.

1 2 3 4 5 6 7 8 9

You were counting with your calculator.
Continue counting to 50.

Now try counting by 2's.

Enter .

Can you count by 5's? Try.
Show the keys to press.

Enter .

Always turn your calculator off when you are finished.

Program Your Calculator to Add and Subtract

Show the keys to press for each calculation. Above the keys print what the display shows at each key press. The first one is done for you.

1. $2 + 3$ 0. 2. 2. 3. 5.
 [C] [2] [+] [3] [=] 5

2. $6 - 5$ 0. 6. 6. 5. 1.
 [C] [6] [-] [5] [=] 1

3. $8 + 7$ 0. 8. 8. 7. 15.
 [C] [8] [+] [7] [=] 15

4. $9 - 4$ 0. 9. 9. 4. 5.
 [C] [9] [-] [4] [=] 5

Are you getting the results you expected?

[C] always brings the calculator back to 0.

[+] and [-] do not show + and - in the display.

[=] tells the calculator to calculate. The result is displayed.

Show the keys to press for each calculation. Above the keys print what the display shows at each key press. The first one is done for you.

5. $23 + 19$ 0. 2. 23. 23. 1. 19. 42.
 [C] [2] [3] [+] [1] [9] [=] 42

23 19

6. $66 + 48$ 0. 6. 66. 66. 4. 48. 114.
 [C] [6] [6] [+] [4] [8] [=] 114

7. $85 - 17$ 0. 8. 85. 85. 1. 17. 68.
 [C] [8] [5] [-] [1] [7] [=] 68

8. $43 + 38$ 0. 4. 43. 43. 3. 38. 81.
 [C] [4] [3] [+] [3] [8] [=] 81

9. $74 - 59$ 0. 7. 74. 74. 5. 59. 15.
 [C] [7] [4] [-] [5] [9] [=] 15

10. $91 - 19$ 0. 9. 91. 91. 1. 19. 72.
 [C] [9] [1] [-] [1] [9] [=] 72

The children should verify that they are pressing the keys correctly by seeing whether or not their results are what they would have expected.

Place Value

The numeral 4852 means 4 thousands 8 hundreds 5 tens 2 ones.

Press **C**. Enter the **value** of the marked digit in the first numeral. Press **+**. Then go on to the next numeral.

The first exercise is done for you.

1. 687 **C** 8 0 +

2139 2 0 0 0 +

4075 5 +

813 8 0 0 +

Result 2885

2. 972 **C** 9 0 0 +

1068 6 0 +

3457 4 0 0 +

6923 6 0 0 0 +

Result 7360

3. 726 **C** 6 +

8049 4 0 +

1350 1 0 0 0 +

2600 6 0 0 +

Result 1646

4. 975 **C** 7 0 +

3108 1 0 0 +

4211 4 0 0 0 +

7965 5 +

Result 4175

5. 411 **C** 4 0 0 +

2678 8 +

6472 7 0 +

4914 9 0 0 +

Result 1378

6. 1234 **C** 2 0 0 +

5678 5 0 0 0 +

9876 7 0 +

5432 4 0 0 +

Result 5670

Now match each result with the numerals below.

4175 4.

2885 1.

1646 3.

7360 2.

5670 6.

1378 5.

If you cannot make a match, check that result.

The first exercise is a completely worked example for the children to follow. The equal key is not pressed. This makes the clearing process at the beginning of each exercise essential.

Roman Numerals

Numerals for

1 to 9

1 = I

2 = II

3 = III

4 = IV

5 = V

6 = VI

7 = VII

8 = VIII

9 = IX

When I precedes
V or X, 1 is
subtracted.

Numerals for multiples of 10, to 90

10 = X

20 = XX

30 = XXX

40 = XL

50 = L

60 = LX

70 = LXX

80 = LXXX

90 = XC

When X precedes
L or C, 10 is
subtracted.

When C precedes
D or M, 100 is
subtracted.

Numerals for multiples of 100, to 1000

100 = C

200 = CC

300 = CCC

400 = CD

500 = D

600 = DC

700 = DCC

800 = DCCC

900 = CM

1000 = M

Express each Roman numeral in standard form by entering the expanded form in your calculator. The first exercise is done for you. The next two are started.

1. $\underbrace{CCC}_{300} \underbrace{XL}_{40} \underbrace{VIII}_{8}$
 $300 + 40 + 8$

$\boxed{C} \boxed{3} \boxed{0} \boxed{0} \boxed{+} \boxed{4} \boxed{0} \boxed{+} \boxed{8} \boxed{=}$
348

2. $\underbrace{M}_{1000} \underbrace{CD}_{400} \underbrace{XX}_{70} \underbrace{IV}_{4}$
 $1000 + 400 + 70 + 4$

$\boxed{C} \boxed{1} \boxed{0} \boxed{0} \boxed{0} \boxed{+} \boxed{4} \boxed{0} \boxed{0} \boxed{+} \boxed{7} \boxed{0}$
 $\boxed{+} \boxed{4} \boxed{=}$ 1474

3. $\underbrace{M}_{1000} \underbrace{CM}_{900} \underbrace{LX}_{60} \underbrace{IX}_{9}$
 $1000 + 900 + 60 + 9$

$\boxed{C} \boxed{1} \boxed{0} \boxed{0} \boxed{0} \boxed{+} \boxed{9} \boxed{0} \boxed{0} \boxed{+} \boxed{6} \boxed{0}$
 $\boxed{+} \boxed{9} \boxed{=}$ 1969

4. $\underbrace{MM}_{2000} \underbrace{DCC}_{700} \underbrace{XL}_{40} \underbrace{VI}_{6}$
 $2000 + 700 + 40 + 6$

$\boxed{C} \boxed{2} \boxed{0} \boxed{0} \boxed{0} \boxed{+} \boxed{7} \boxed{0} \boxed{0} \boxed{+} \boxed{4} \boxed{0}$
 $\boxed{+} \boxed{6} \boxed{=}$ 2746

5. $\underbrace{MMM}_{3000} \underbrace{CD}_{400} \underbrace{L}_{50} \underbrace{VIII}_{8}$
 $3000 + 400 + 50 + 8$

$\boxed{C} \boxed{3} \boxed{0} \boxed{0} \boxed{0} \boxed{+} \boxed{4} \boxed{0} \boxed{0} \boxed{+} \boxed{5} \boxed{0}$
 $\boxed{+} \boxed{8} \boxed{=}$ 3458

6. $\underbrace{M}_{1000} \underbrace{CM}_{900} \underbrace{LXX}_{80} \underbrace{III}_{3}$
 $1000 + 900 + 80 + 3$

$\boxed{C} \boxed{1} \boxed{0} \boxed{0} \boxed{0} \boxed{+} \boxed{9} \boxed{0} \boxed{0} \boxed{+} \boxed{8} \boxed{0}$
 $\boxed{+} \boxed{3} \boxed{=}$ 1983

7. $\underbrace{MM}_{2000} \underbrace{DCC}_{800} \underbrace{XL}_{40} \underbrace{VII}_{7}$
 $2000 + 800 + 40 + 7$

$\boxed{C} \boxed{2} \boxed{0} \boxed{0} \boxed{0} \boxed{+} \boxed{8} \boxed{0} \boxed{0} \boxed{+} \boxed{4} \boxed{0}$
 $\boxed{+} \boxed{7} \boxed{=}$ 2847

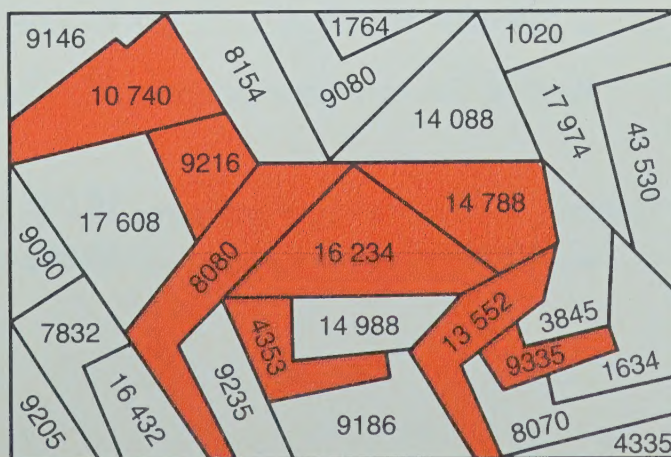
Name _____

Word Names

Express each number in standard form. Then calculate the sum of the number. The first exercise is done for you.

- | | | | |
|-----------------------------------|--------------|---|--------------|
| 1. three hundred fifteen | <u>315</u> | 2. one thousand nine hundred eighty-three | <u>1983</u> |
| four thousand two hundred eleven | <u>4211</u> | six hundred ninety-seven | <u>697</u> |
| nine thousand twenty-six | <u>9026</u> | five thousand four hundred | <u>5400</u> |
| sum | <u>13552</u> | sum | <u>8080</u> |
| 3. seven thousand two hundred ten | <u>7210</u> | 4. seven hundred five | <u>705</u> |
| eight thousand seventy-four | <u>8074</u> | six thousand nine | <u>6009</u> |
| nine hundred fifty | <u>950</u> | four thousand twenty-six | <u>4026</u> |
| sum | <u>16234</u> | sum | <u>10740</u> |
| 5. six hundred twenty-five | <u>625</u> | 6. seven thousand sixteen | <u>7016</u> |
| eight thousand three hundred nine | <u>8309</u> | one thousand two hundred thirty-four | <u>1234</u> |
| four hundred one | <u>401</u> | nine hundred sixty-six | <u>966</u> |
| sum | <u>9335</u> | sum | <u>9216</u> |
| 7. nine hundred twenty-seven | <u>927</u> | 8. five thousand seven hundred fifty | <u>5750</u> |
| two thousand six hundred twelve | <u>2612</u> | eight thousand four hundred | <u>8400</u> |
| eight hundred fourteen | <u>814</u> | six hundred thirty-eight | <u>638</u> |
| sum | <u>4353</u> | sum | <u>14788</u> |

Color the shapes that have the same numbers as your sums.



Place-Value Quiz

Enter the first number. Use $\boxed{+}$ or $\boxed{-}$ to change the display to the next number. The first exercise is done for you.

1. $23\ 456 \xrightarrow{-\ 3000} 20\ 456 \xrightarrow{-\ 50} 20\ 406 \xrightarrow{+\ 7000} \rightarrow$
 $27\ 406 \xrightarrow{-\ 20000} 7\ 406 \xrightarrow{+\ 60} 7\ 466$

2. $85\ 324 \xrightarrow{+\ 400} 85\ 724 \xrightarrow{-\ 5000} 80\ 724 \xrightarrow{+\ 70} \rightarrow$
 $80\ 794 \xrightarrow{-\ 30000} 50\ 794 \xrightarrow{+\ 2000} 52\ 794$

3. $97\ 680 \xrightarrow{-\ 200} 97\ 480 \xrightarrow{-\ 7000} 90\ 480 \xrightarrow{-\ 400} \rightarrow$
 $90\ 080 \xrightarrow{-\ 80} 90\ 000 \xrightarrow{-\ 90000} 0$

4. $15\ 693 \xrightarrow{+\ 10\ 000} 25\ 693 \xrightarrow{+\ 300} 25\ 993 \xrightarrow{-\ 4000} \rightarrow$
 $21\ 993 \xrightarrow{-\ 80} 21\ 913 \xrightarrow{+\ 7000} 28\ 913$

5. $10\ 305 \xrightarrow{+\ 500} 10\ 805 \xrightarrow{+\ 5000} 15\ 805 \xrightarrow{+\ 70} \rightarrow$
 $15\ 875 \xrightarrow{+\ 60000} 75\ 875 \xrightarrow{+\ 100} 15\ 975$

6. $63\ 841 \xrightarrow{+\ 5000} 68\ 841 \xrightarrow{-\ 40000} 28\ 841 \xrightarrow{-\ 600} \rightarrow$
 $28\ 241 \xrightarrow{+\ 50} 28\ 291 \xrightarrow{+\ 40000} 68\ 291$

7. $18\ 479 \xrightarrow{-\ 40} 18\ 439 \xrightarrow{-\ 5000} 13\ 439 \xrightarrow{+\ 20\ 000} \rightarrow$
 $33\ 439 \xrightarrow{-\ 6} 33\ 433 \xrightarrow{-\ 100} 33\ 333$

8. $68\ 492 \xrightarrow{-\ 60000} 18\ 492 \xrightarrow{-\ 400} 18\ 092 \xrightarrow{-\ 8000} \rightarrow$
 $10\ 092 \xrightarrow{-\ 2} 10\ 090 \xrightarrow{-\ 90} 10\ 000$

Name _____

Know Your Numbers

17 643	3769	2935	5013	793
2854	6321	9875	3160	2785

1. ☐ Add the numbers that have 7 in the hundreds place. 7347
2. ☐ Subtract the least number from the greatest. 16 850
3. ☐ Add the numbers between 2000 and 5000. 15 503
4. ☐ Add the numbers that have 3 in the ones place. 23 449
5. ☐ Subtract the number closest to 5000 from the number closest to 18 000. 12 630
6. ☐ Add the numbers between 3000 and 10 000. 28 138
7. ☐ Subtract the number closest to 800 from the number closest to 3000. 2142
8. ☐ Subtract the greatest number in the second row from the greatest number in the first row. 7768
9. ☐ Add the even numbers. 6014
10. ☐ Add the number closest to 6000 to the least number. 7114
11. ☐ Subtract the number closest to 3000 from the greatest number. 14 708
12. ☐ Use your results from exercises 1 to 11. Subtract the least result from the greatest. 25 996
(from ex. 6,7)

Program Your Calculator to Multiply

Show the keys to press for each calculation. Above the keys print what the calculator shows at each key press. The first exercise is done for you.

1. 3×6 0. 3. 3. 6. 18.
 [C] [3] [X] [6] [=] 18

2. 7×8 0. 7. 7. 8. 56.
 [C] [7] [X] [8] [=] 56

3. 4×9 0. 4. 4. 9. 36.
 [C] [4] [X] [9] [=] 36

4. 5×7 0. 5. 5. 7. 35.
 [C] [5] [X] [7] [=] 35

Are you getting the results you expected?

Show the keys to press for each calculation. Above the keys print what the calculator shows at each key press.

5. 48×7 0. 4. 48. 48. 7. 336.
 [C] [4] [8] [X] [7] [=] 336

6. 96×5 0. 9. 96. 96. 5. 480.
 [C] [9] [6] [X] [5] [=] 480

7. 55×3 0. 5. 55. 55. 3. 165.
 [C] [5] [5] [X] [3] [=] 165

8. 72×5 0. 7. 72. 72. 5. 360.
 [C] [7] [2] [X] [5] [=] 360

9. 24×6 0. 2. 24. 24. 6. 144.
 [C] [2] [4] [X] [6] [=] 144

10. 20×7 0. 2. 20. 20. 7. 140.
 [C] [2] [0] [X] [7] [=] 140

11. 36×3 0. 3. 36. 36. 3. 108.
 [C] [3] [6] [X] [3] [=] 108

12. 689×7 0. 6. 68. 689. 689. 7. 4823.
 [C] [6] [8] [9] [X] [7] [=] 4823

13. 215×9 0. 2. 21. 215. 215. 9. 1935.
 [C] [2] [1] [5] [X] [9] [=] 1935

14. 114×6 0. 1. 11. 114. 114. 6. 684.
 [C] [1] [1] [4] [X] [6] [=] 684

15. 242×7 0. 2. 24. 242. 242. 7. 1694.
 [C] [2] [4] [2] [X] [7] [=] 1694

The children should verify that they are pressing the keys correctly by checking whether or not their results are what they expect.

Concert Math

This table shows the attendance at a school concert.

Day	Children under 12	Students 12 to 18	Adults	Senior Citizens
Wednesday	15	12	24	12
Thursday	26	17	29	29
Friday	35	18	34	18

- How many children under 12 saw the concert?
76
- Student tickets cost \$2. How much money was made on Friday from student tickets?
\$36
- How many more senior citizens attended on Thursday than on Wednesday?
17
- How many people attended the concert on Friday?
105
(use for ex. 11, 12)
- Adult tickets cost \$3. How much money was made on Thursday from adult tickets?
\$87
- How many senior citizens saw the concert?
59
(use for ex. 7)
- Senior citizen tickets cost \$2. How much money was made from senior citizen tickets?
118
- How many people saw the concert on Thursday?
101
(use for ex. 11, 12)
- How many more adults attended on Friday than on Wednesday?
10
- How many people saw the concert on Wednesday?
63
(use for ex. 11, 12)
- How many people attended the concert?
269
- Which day had the greatest number of people?
Fri.

Program Your Calculator to Divide

Show the keys to press for each calculation. Above the keys print what the calculator shows at each key press. The first one is done for you.

1. $35 \div 5$	0.	3.	35.	35.	5.	7.	
	<input type="text" value="C"/>	<input type="text" value="3"/>	<input type="text" value="5"/>	<input type="text" value="÷"/>	<input type="text" value="5"/>	<input type="text" value="="/>	<u>7</u>

2. $7 \overline{)56}$	0.	5.	56.	56.	7.	8.	
	<input type="text" value="C"/>	<input type="text" value="5"/>	<input type="text" value="6"/>	<input type="text" value="÷"/>	<input type="text" value="7"/>	<input type="text" value="="/>	<u>8</u>

3. $63 \div 9$	0.	6.	63.	63.	9.	7.	
	<input type="text" value="C"/>	<input type="text" value="6"/>	<input type="text" value="3"/>	<input type="text" value="÷"/>	<input type="text" value="9"/>	<input type="text" value="="/>	<u>7</u>

4. $3 \overline{)18}$	0.	1.	18.	18.	3.	6.	
	<input type="text" value="C"/>	<input type="text" value="1"/>	<input type="text" value="8"/>	<input type="text" value="÷"/>	<input type="text" value="3"/>	<input type="text" value="="/>	<u>6</u>

Are you getting the results you expected?

Show the keys to press for each calculation. Above the keys print what the display shows at each key press. Then show a related multiplication fact. The first one is done for you.

5. $4 \overline{)28}$	0.	2.	28.	28.	4.	7.		
	<input type="text" value="C"/>	<input type="text" value="2"/>	<input type="text" value="8"/>	<input type="text" value="÷"/>	<input type="text" value="4"/>	<input type="text" value="="/>	<u>7</u>	<u>$7 \times 4 = 28$</u>

6. $6 \overline{)54}$	0.	5.	54.	54.	6.	9.		
	<input type="text" value="C"/>	<input type="text" value="5"/>	<input type="text" value="4"/>	<input type="text" value="÷"/>	<input type="text" value="6"/>	<input type="text" value="="/>	<u>9</u>	<u>$9 \times 6 = 54$</u>

7. $40 \div 8$	0.	4.	40.	40.	8.	5.		
	<input type="text" value="C"/>	<input type="text" value="4"/>	<input type="text" value="0"/>	<input type="text" value="÷"/>	<input type="text" value="8"/>	<input type="text" value="="/>	<u>5</u>	<u>$5 \times 8 = 40$</u>

8. $72 \div 9$	0.	7.	72.	72.	9.	8.		
	<input type="text" value="C"/>	<input type="text" value="7"/>	<input type="text" value="2"/>	<input type="text" value="÷"/>	<input type="text" value="9"/>	<input type="text" value="="/>	<u>8</u>	<u>$8 \times 9 = 72$</u>

9. $24 \div 6$	0.	2.	24.	24.	6.	4.		
	<input type="text" value="C"/>	<input type="text" value="2"/>	<input type="text" value="4"/>	<input type="text" value="÷"/>	<input type="text" value="6"/>	<input type="text" value="="/>	<u>4</u>	<u>$4 \times 6 = 24$</u>

10. $5 \overline{)25}$	0.	2.	25.	25.	5.	5.		
	<input type="text" value="C"/>	<input type="text" value="2"/>	<input type="text" value="5"/>	<input type="text" value="÷"/>	<input type="text" value="5"/>	<input type="text" value="="/>	<u>5</u>	<u>$5 \times 5 = 25$</u>

11. $450 \div 9$	0.	4.	45.	450.	450.	9.	50.	
	<input type="text" value="C"/>	<input type="text" value="4"/>	<input type="text" value="5"/>	<input type="text" value="0"/>	<input type="text" value="÷"/>	<input type="text" value="9"/>	<input type="text" value="="/>	<u>50</u> <u>$50 \times 9 = 450$</u>

12. $4 \overline{)160}$	0.	1.	16.	160.	160.	4.	40.	
	<input type="text" value="C"/>	<input type="text" value="1"/>	<input type="text" value="6"/>	<input type="text" value="0"/>	<input type="text" value="÷"/>	<input type="text" value="4"/>	<input type="text" value="="/>	<u>40</u> <u>$40 \times 4 = 160$</u>

13. $8 \overline{)240}$	0.	2.	24.	240.	240.	8.	30.	
	<input type="text" value="C"/>	<input type="text" value="2"/>	<input type="text" value="4"/>	<input type="text" value="0"/>	<input type="text" value="÷"/>	<input type="text" value="8"/>	<input type="text" value="="/>	<u>30</u> <u>$30 \times 8 = 240$</u>

14. $5 \overline{)300}$	0.	3.	30.	300.	300.	5.	60.	
	<input type="text" value="C"/>	<input type="text" value="3"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="÷"/>	<input type="text" value="5"/>	<input type="text" value="="/>	<u>60</u> <u>$60 \times 5 = 300$</u>

15. $3 \overline{)120}$	0.	1.	12.	120.	120.	3.	40.	
	<input type="text" value="C"/>	<input type="text" value="1"/>	<input type="text" value="2"/>	<input type="text" value="0"/>	<input type="text" value="÷"/>	<input type="text" value="3"/>	<input type="text" value="="/>	<u>40</u> <u>$40 \times 3 = 120$</u>

The children should verify that they are pressing the keys correctly by checking whether or not their results are what they expect.

Summing Numbers

Find the sum of the whole numbers from 1 to 20.

Did you get 210?

It would take a long time to find the sum of the numbers from 1 to 100.

There is a short cut. We will try it on the sum of 1 to 20. We know the result should be 210.

last number first number

$$\begin{array}{r}
 1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 + 10 + 11 + 12 + 13 + 14 + 15 + 16 + 17 + 18 + 19 + 20 \\
 + 20 + 19 + 18 + 17 + 16 + 15 + 14 + 13 + 12 + 11 + 10 + 9 + 8 + 7 + 6 + 5 + 4 + 3 + 2 + 1 \\
 \hline
 21 + 21 + 21 + 21 + 21 + 21 + 21 + 21 + 21 + 21 + 21 + 21 + 21 + 21 + 21 + 21 + 21 + 21 + 21 + 21 = 420
 \end{array}$$

twenty 21's, or 20×21

Since each number was used twice, divide the sum 420 by 2.

$$420 \div 2 = 210$$

Here is the short cut method for your calculator.

C	1	+	2	0	=	×	2	0	=	÷	2	=	210
Add the first number and the last number.					Multiply the sum by how many numbers.					Divide this product by 2.			

Show the keys to press to find each sum. Follow the example above.

1. The sum of 1 to 18.

$$C \ 1 \ + \ 1 \ 8 \ = \ X \ 1 \ 8 \ = \ \div \ 2 \ = \ 171$$

2. The sum $1 + 2 + 3 + \dots + 29 + 30$.

$$C \ 1 \ + \ 3 \ 0 \ = \ X \ 3 \ 0 \ = \ \div \ 2 \ = \ 465$$

3. The sum of 1 to 100.

$$C \ 1 \ + \ 1 \ 0 \ 0 \ = \ X \ 1 \ 0 \ 0 \ = \ \div \ 2 \ = \ 5050$$

4. The sum $1 + 2 + 3 + \dots + 999 + 1000$.

$$C \ 1 \ + \ 1 \ 0 \ 0 \ 0 \ = \ X \ 1 \ 0 \ 0 \ 0 \ = \ \div \ 2 \ = \ 500 \ 500$$

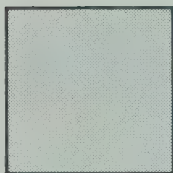
5. The sum of 40 to 80.

$$C \ 4 \ 0 \ + \ 8 \ 0 \ = \ X \ 4 \ 1 \ = \ \div \ 2 \ = \ 2460$$

Counting Decimal Tenths and Hundredths

1 whole

1.0



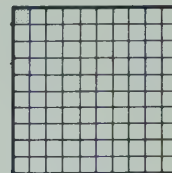
1 tenth

0.1



1 hundredth

0.01



To count by 0.1's press:

C0+.1======.

Count from 0 to 2.5.

Print the numerals shown.

0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.
1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.
2.1	2.2	2.3	2.4	2.5					

Now count from 7.4 to 10.0.

To count by 0.01's press:

.

Count from 0 to 0.35.

Print the numerals shown.

0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.1
0.11	0.12	0.13	0.14	0.15	0.16	0.17	0.18	0.19	0.2
0.21	0.22	0.23	0.24	0.25	0.26	0.27	0.28	0.29	0.3
0.31	0.32	0.33	0.34	0.35					

Now count from 8.03 to 8.99.

Program Your Calculator for Decimal Work

Show the keys to press for each calculation. Above the keys print what the display shows at each key press. The first exercise is done for you.

1. $0.82 - 0.59$

0. 0. 0. 0.8 0.82 0.82 0. 0. 0.5 0.59 0.23
 [C] [0] [.] [8] [2] [-] [0] [.] [5] [9] [=] 0.23

2. $4.7 + 9.8$

0. 4. 4. 4.7 4.7 9. 9. 9.8 14.5
 [C] [4] [.] [7] [+] [9] [.] [8] [=] 14.5

3. 6.9×7

0. 6. 6. 6.9 6.9 7. 48.3
 [C] [6] [.] [9] [X] [7] [=] 48.3

4. $11.8 + 7.4$

0. 1. 11. 11. 11.8 11.8 7. 7. 7.4 19.2
 [C] [1] [1] [.] [8] [+] [7] [.] [4] [=] 19.2

5. 24.1×6

0. 2. 24. 24. 24.1 24.1 6. 144.6
 [C] [2] [4] [.] [1] [X] [6] [=] 144.6

6. $9.08 - 7.5$

0. 9. 9. 9.0 9.08 9.08 7. 7. 7.5 1.58
 [C] [9] [.] [0] [8] [-] [7] [.] [5] [=] 1.58

7. 0.92×5

0. 0. 0. 0.9 0.92 0.92 5. 4.6
 [C] [0] [.] [9] [2] [X] [5] [=] 4.6

8. $1.5 + 6.3 + 0.9$

0. 1. 1. 1.5 1.5 6. 6. 6.3 6.3 0. 0. 0.9 8.7
 [C] [1] [.] [5] [+] [6] [.] [3] [+] [0] [.] [9] [=] 8.7

Name _____

Decimals and Money



penny
1¢
\$0.01



nickel
5¢
\$0.05



dime
10¢
\$0.10



quarter
25¢
\$0.25



dollar bill
100¢
\$1.00

Complete each chart. Then find the total value.
The first exercise is started.



	number of	value of	value of all <input type="checkbox"/>
dollar bill			
quarter	3	\$0.25	\$0.75
dime	4	\$0.10	\$0.40
nickel			
penny	5	\$0.01	\$0.05
total value <input type="checkbox"/>			\$1.20



	number of	value of	value of all <input type="checkbox"/>
dollar bill			
quarter	4	\$0.25	\$1.00
dime	9	\$0.10	\$0.90
nickel	6	\$0.05	\$0.30
penny			
total value <input type="checkbox"/>			\$2.20



	number of	value of	value of all <input type="checkbox"/>
dollar bill	5	\$1.00	\$5.00
quarter	6	\$0.25	\$1.50
dime			
nickel	7	\$0.05	\$0.35
penny			
total value <input type="checkbox"/>			\$6.85

The children should record the values of the coins using \$. notation as suggested by the partially worked example provided in the first exercise.

Name _____

Know Your Decimals

1.5

6.99

7.1

3.28

0.64

7.25

0.1

9.05

1. ☐ Add the decimals that are to the tenths place. 8.7
2. ☐ Add the decimals that are less than 1. 0.74
3. ☐ Subtract the least number from the greatest. 8.95
4. ☐ Add the decimals between 1 and 7. 11.77
5. ☐ Multiply the decimal closest to 2 by 5. 7.5
6. ☐ Add the decimal closest to 9 and the decimal closest to 1. 9.69
7. ☐ Multiply the decimal closest to 7 by 3. 20.97
8. ☐ Add the decimals that are to the hundredths place. 27.21
9. ☐ Add the decimals that have 5 in the hundredths place. 16.3
10. ☐ Add the decimals that have 1 in the tenths place. 7.2
11. ☐ Subtract the greatest number in the top row from the greatest number in the bottom row. 1.95
12. ☐ Multiply the decimal closest to 1 by 4. 2.56

Patterns

Calculate only as many products as you need to, to find each pattern. Complete each pattern without your calculator. Then check.

1. $1 \times 101 = \underline{101}$
 $11 \times 101 = \underline{1111}$
 $111 \times 101 = \underline{11211}$
 $1111 \times 101 = \underline{112211}$
 $11111 \times 101 = \underline{1122211}$
 $111111 \times 101 = \underline{11222211}$

$2 \times 101 = \underline{202}$
 $22 \times 101 = \underline{2222}$
 $222 \times 101 = \underline{22422}$
 $2222 \times 101 = \underline{224422}$
 $22222 \times 101 = \underline{2244422}$
 $222222 \times 101 = \underline{22444422}$

$3 \times 101 = \underline{303}$
 $33 \times 101 = \underline{3333}$
 $333 \times 101 = \underline{33633}$
 $3333 \times 101 = \underline{336633}$
 $33333 \times 101 = \underline{3366633}$
 $333333 \times 101 = \underline{33666633}$

$4 \times 101 = \underline{404}$
 $44 \times 101 = \underline{4444}$
 $444 \times 101 = \underline{44844}$
 $4444 \times 101 = \underline{448844}$
 $44444 \times 101 = \underline{4488844}$
 $444444 \times 101 = \underline{44888844}$

2. $1 \times 1 = \underline{1}$
 $11 \times 11 = \underline{121}$
 $111 \times 111 = \underline{12321}$
 $1111 \times 1111 = \underline{1234321}$

3. $9 \times 9 = \underline{81}$
 $99 \times 99 = \underline{9801}$
 $999 \times 999 = \underline{998001}$
 $9999 \times 9999 = \underline{9980001}$

4. $3 \times 37 = \underline{111}$
 $6 \times 37 = \underline{222}$
 $9 \times 37 = \underline{333}$
 $12 \times 37 = \underline{444}$
 $15 \times 37 = \underline{555}$
 $18 \times 37 = \underline{666}$
 $21 \times 37 = \underline{777}$
 $24 \times 37 = \underline{888}$
 $27 \times 37 = \underline{999}$

5. $4 \times 4 = \underline{16}$
 $44 \times 4 = \underline{176}$
 $444 \times 4 = \underline{1776}$
 $4444 \times 4 = \underline{17776}$

 $6 \times 6 = \underline{36}$
 $66 \times 6 = \underline{396}$
 $666 \times 6 = \underline{3996}$
 $6666 \times 6 = \underline{39996}$

Name _____

Remainders

Recall
$$\begin{array}{r} 6 \text{ R}3 \\ 4 \overline{)27} \\ \underline{24} \\ 3 \end{array}$$

Try $\boxed{2} \boxed{7} \boxed{\div} \boxed{4} \boxed{=} \underline{6.75}$.

6.75 means 6 and $\frac{75}{100}$

or $6\frac{3}{4}$.

6 remainder 3
when dividing by 4
means $6\frac{3}{4}$.

Divide. Each result will have a remainder expressed as a decimal.

1. $97 \div 2 = \underline{48.5}$ 2. $8 \overline{)514} \quad \underline{64.25}$ 3. $785 \div 10 = \underline{78.5}$

4. $499 \div 4 = \underline{124.75}$ 5. $149 \div 5 = \underline{29.8}$ 6. $3 \overline{)245} \quad \underline{81.666666}$

7. $764 \div 5 = \underline{152.8}$ 8. $2 \overline{)803} \quad \underline{401.5}$ 9. $4 \overline{)775} \quad \underline{193.75}$

10. $8 \overline{)625} \quad \underline{78.125}$ 11. $519 \div 5 = \underline{103.8}$ 12. $3 \overline{)622} \quad \underline{207.33333}$

13. $712 \div 10 = \underline{71.2}$ 14. $857 \div 2 = \underline{428.5}$ 15. $5 \overline{)222} \quad \underline{44.4}$

16. $618 \div 8 = \underline{77.25}$ 17. $549 \div 4 = \underline{137.25}$ 18. $8 \overline{)329} \quad \underline{41.125}$

Sharing Equally

Marilyn has 90¢ to share with her 3 sisters.
How much money will each receive?

3 sisters
and Marilyn

$$\boxed{C} \boxed{9} \boxed{0} \boxed{\div} \boxed{4} \boxed{=} \underline{22.5}$$

You cannot give part of a cent.
Each girl will receive 22¢.
There will be money left.

Carlo has 36 h (hours) to spend on 5
equally important jobs. How much time
can he spend on each?

$$\boxed{C} \boxed{3} \boxed{6} \boxed{\div} \boxed{5} \boxed{=} \underline{7.2}$$

You can use part of an hour.
Carlo can spend 7.2 h on each job.

23 people are going on a trip. If a car
seats 4 people, how many cars are
needed?

$$\boxed{C} \boxed{2} \boxed{3} \boxed{\div} \boxed{4} \boxed{=} \underline{5.75}$$

You cannot use part of a car.
6 cars are needed.
1 car will have fewer people.

Decide what to do with the remainder to give the best answer.

1. A box of 100 stamps is to be shared
equally among 8 friends. How many
stamps will each receive?

12

2. Lance has 90 min to solve 4 equally
difficult problems. How long should he
spend on each?

22.5 min

3. Enza has 356 pamphlets to put in
boxes. She puts 10 in each box. How
many boxes does she need?

36

4. Milo has 118 hockey cards to share
with 4 friends. How many cards will
each receive?

23

5. 214 students are to sit in rows. One row
seats 8. How many rows are needed for
the students?

27

6. A pie rack holds 5 pies. How many pie
racks are needed for 96 pies?

20

Ciphering

In a cipher a symbol stands for a letter.

A 51	B 52	C 53	D 54	E 55	F 56	G 57	H 58	I 59
J 60	K 61	L 62	M 63	N 64	O 65	P 66	Q 67	R 68
S 69	T 70	U 71	V 72	W 73	X 74	Y 75	Z 76	space 77

To **encipher** a message is to put it into symbols.

To **decipher** a message is to figure it out.

Encipher: CAT becomes 53 51 70.

Decipher: 54 65 57 becomes DOG.

Often you must calculate to decipher.

$$13 + 8 + 27 + 4$$

52
B

$$13 \times 5$$

65
O

$$90 - 6 - 13 - 6$$

65
O

$$25 + 19 + 17$$

61
K

Decipher this message.

$$9 + 24 + 20$$

53
C

$$15 + 14 + 22$$

51
A

$$93 - 18 - 13$$

62
L

$$212 \div 4$$

53
C

$$42 + 17 + 12$$

71
U

$$496 \div 8$$

62
L

$$12 + 25 + 14$$

51
A

$$7 \times 5 \times 2$$

70
T

$$90 - 11 - 14$$

65
O

$$2 \times 17 \times 2$$

68
R

$$276 \div 4$$

69
S

$$100 - 8 - 7 - 8$$

77

$$29 \times 2$$

58
H

$$255 \div 5$$

51
A

$$6 \times 3 \times 4$$

72
V

$$85 - 13 - 17$$

55
E

$$41 + 10 + 26$$

77

$$488 \div 8$$

61
K

$$14 + 28 + 13$$

55
E

$$5 \times 3 \times 5$$

75
Y

$$95 - 11 - 15$$

69
S

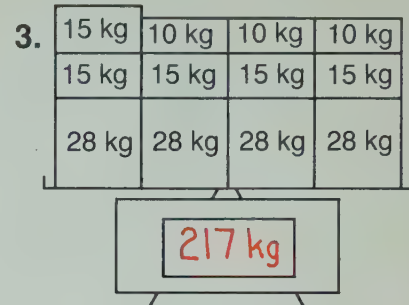
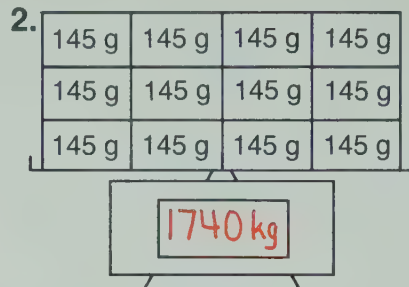
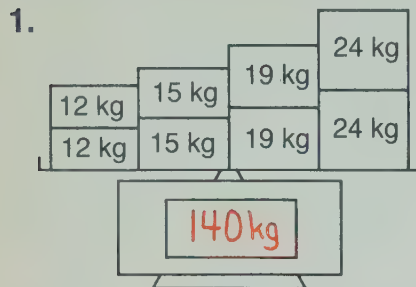
Make up a message. Encipher it.

Give it to a friend to decipher.

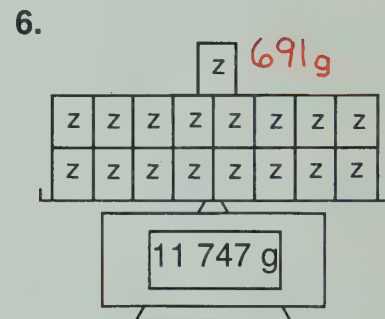
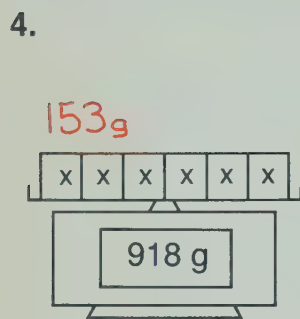
Name _____

Mass

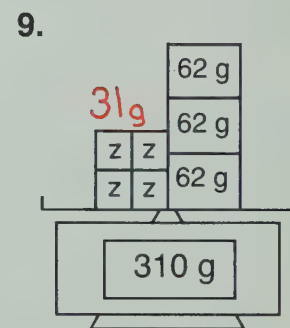
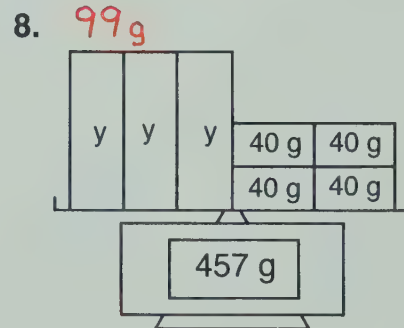
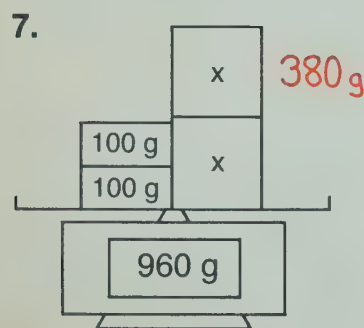
Calculate the total mass on each scale.



Calculate the mass of one box.

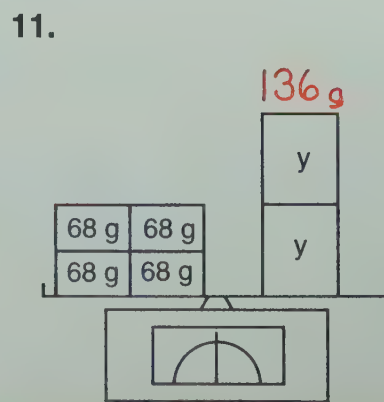
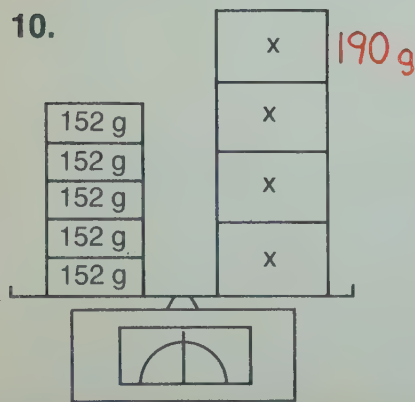


Calculate the mass of one unmeasured box.



The scales are balanced.

Calculate the mass of one unmeasured box.



All the boxes on any one scale have the same mass if they are the same size. Exercises 1 to 9 gradually increase in difficulty; they use one kind of scale. Exercises 10 to 12 are easier, but they involve the use of balance scales.

Name _____

Rounding

Consider the rounding of each number. If the number will be rounded up, put a check (✓) beside it. Add the numbers to be rounded up. If the sum is 100 000, you have correctly identified the numbers to be rounded up. Then round each number. The first exercise is done for you.

1. Round to the nearest hundred.

45 761	✓	45 800
38 624		38 600
27 539		27 500
28 185	✓	28 200
26 054	✓	26 100

$$45\,761 + 28\,185 + 26\,054 = 100\,000$$

2. Round to the nearest ten.

8 429	✓	8 430
67 355	✓	67 360
14 273		14 270
16 309	✓	16 310
7 907	✓	7 910

3. Round to the nearest thousand.

19 426		19 000
15 837	✓	16 000
49 625	✓	50 000
58 496		58 000
34 538	✓	35 000

4. Round to the nearest ten thousand.

71 685		70 000
55 374	✓	60 000
36 192	✓	40 000
8 434	✓	10 000
24 978		20 000

5. Round to the nearest hundred.

64 162	✓	64 200
48 629		48 600
33 333		33 300
12 079	✓	12 100
23 759	✓	23 800

6. Round to the nearest thousand.

8 266		8 000
23 628	✓	24 000
75 496		75 000
19 785	✓	20 000
56 587	✓	57 000

7. Round to the nearest ten thousand.

18 425	✓	20 000
35 260	✓	40 000
46 315	✓	50 000
32 946		30 000
21 540		20 000

8. Round to the nearest ten.

2 953		2 950
87 135	✓	87 140
7 684		7 680
14 511		14 510
12 865	✓	12 870

Name _____

22

Know Your Numbers

61 875

38 144

26 128

42 914

16 011

25 987

59 325

43 966

37 892

48 379

1. ☐ Add the numbers greater than 40 000.

256 459

2. ☐ Subtract the number closest to 25 000 from the number closest to 60 000.

33 338

3. ☐ Add the numbers that have 6 in the thousands place.

42 139

4. ☐ Subtract the greatest number in the second row from the greatest number in the first row.

2550

5. ☐ Add the greatest number and the number closest to 42 000.

104 789

6. ☐ Subtract the least number from the greatest.

45 864

7. ☐ Add the numbers that when rounded to the nearest hundred have 9 in the hundreds place.

142 681

8. ☐ Add the numbers that have 4 in the ten thousands place.

135 259

9. ☐ Subtract the number closest to 26 000 from the number closest to 38 000.

11 905

10. ☐ Add the numbers between 20 000 and 45 000.

215 031

11. ☐ Multiply the number closest to 49 000 by 12.

580 548

12. ☐ Divide the number closest to 16 000 by 9.

1779

Estimating Sums and Differences

When adding or subtracting with your calculator, it is important to know if your results are reasonable.

You can estimate to find out if your results are reasonable.

Estimate each result. The first exercise is done for you.

1. Round to the nearest hundred.

$$\begin{array}{r} 300 \\ 323 \end{array} + \begin{array}{r} 200 \\ 189 \end{array} + \begin{array}{r} 500 \\ 476 \end{array} = \begin{array}{r} 1000 \\ 988 \end{array}$$

2. Round to the nearest ten.

$$\begin{array}{r} 30 \\ 31 \end{array} + \begin{array}{r} 70 \\ 72 \end{array} + \begin{array}{r} 70 \\ 69 \end{array} + \begin{array}{r} 80 \\ 78 \end{array} = \begin{array}{r} 250 \\ 250 \end{array}$$

3. Round to the nearest hundred.

$$\begin{array}{r} 5100 \\ 5097 \end{array} + \begin{array}{r} 600 \\ 606 \end{array} + \begin{array}{r} 0 \\ 34 \end{array} + \begin{array}{r} 500 \\ 467 \end{array} + \begin{array}{r} 800 \\ 764 \end{array} = \begin{array}{r} 7000 \\ 6968 \end{array}$$

4. Round to the nearest ten.

$$\begin{array}{r} 100 \\ 97 \end{array} - \begin{array}{r} 40 \\ 36 \end{array} = \begin{array}{r} 60 \\ 61 \end{array}$$

5. Round to the nearest hundred.

$$\begin{array}{r} 700 \\ 675 \end{array} - \begin{array}{r} 100 \\ 112 \end{array} = \begin{array}{r} 600 \\ 563 \end{array}$$

6. Round to the nearest thousand.

$$\begin{array}{r} 7000 \\ 7186 \end{array} + \begin{array}{r} 2000 \\ 2493 \end{array} + \begin{array}{r} 4000 \\ 3604 \end{array} = \begin{array}{r} 13\,000 \\ 13\,283 \end{array}$$

7. Round to the nearest thousand.

$$\begin{array}{r} 9000 \\ 9136 \end{array} - \begin{array}{r} 4000 \\ 4287 \end{array} = \begin{array}{r} 5000 \\ 4849 \end{array}$$

8. Round to the nearest hundred.

$$\begin{array}{r} 1500 \\ 1487 \end{array} + \begin{array}{r} 900 \\ 925 \end{array} + \begin{array}{r} 900 \\ 855 \end{array} + \begin{array}{r} 400 \\ 392 \end{array} = \begin{array}{r} 3700 \\ 3659 \end{array}$$

Now use your calculator to find each sum or difference. Are the results close to your estimates?

Addition and Subtraction Constants

Enter each program. Above each $\boxed{=}$ print what the display shows. Explain what your calculator is doing.

1. $\boxed{C} \boxed{8} \boxed{+} \boxed{7} \boxed{=} \boxed{9} \boxed{=} \boxed{5} \boxed{=} \boxed{7} \boxed{=} \boxed{1} \boxed{2} \boxed{=}$
 15. 16. 12. 14. 19.
 adding 7 to each number

2. $\boxed{C} \boxed{6} \boxed{+} \boxed{9} \boxed{=} \boxed{2} \boxed{=} \boxed{4} \boxed{=} \boxed{5} \boxed{=} \boxed{1} \boxed{4} \boxed{=}$
 15. 11. 13. 14. 23.
 adding 9 to each number

3. $\boxed{C} \boxed{8} \boxed{-} \boxed{2} \boxed{=} \boxed{9} \boxed{=} \boxed{4} \boxed{=} \boxed{3} \boxed{=} \boxed{1} \boxed{5} \boxed{=}$
 6. 7. 2. 1. 13.
 subtracting 2 from each number

4. $\boxed{C} \boxed{1} \boxed{4} \boxed{-} \boxed{5} \boxed{=} \boxed{9} \boxed{=} \boxed{2} \boxed{0} \boxed{=} \boxed{2} \boxed{7} \boxed{=}$
 9. 4. 15. 22.
 subtracting 5 from each number

Complete each table. Use the addition or subtraction constant.

5. + 285

169	454
326	611
492	777
547	832

6. + 366

293	659
476	842
591	957
872	1238

7. + 905

462	1367
380	1285
791	1696
254	1159

8. - 136

225	89
394	258
876	740
925	789

9. - 428

500	72
621	193
782	354
848	420

10. - 567

666	99
741	174
825	258
937	370

Name _____

26

Estimating Products

When multiplying with your calculator, it is important to know if your results are reasonable.

You can estimate to find out if your results are reasonable.

Round each factor to a number that is easy to multiply mentally. For example, 938 rounds to 900, 68 rounds to 70, 114 rounds to 100, 1384 rounds to 1000.

Estimate each result. The first exercise is done for you.

Estimates will vary.

$$\begin{array}{r} 1. \quad 385 \\ \times 73 \\ \hline 28105 \end{array}$$

$$\begin{array}{r} 400 \\ \times 80 \\ \hline 32000 \end{array}$$

three
zeros

$$\begin{array}{r} 2. \quad 863 \\ \times 49 \\ \hline 42287 \end{array}$$

$$\begin{array}{r} 900 \\ \times 50 \\ \hline 45000 \end{array}$$

$$\begin{array}{r} 3. \quad 218 \\ \times 37 \\ \hline 8066 \end{array}$$

$$\begin{array}{r} 200 \\ \times 40 \\ \hline 8000 \end{array}$$

$$\begin{array}{r} 4. \quad 58 \\ \times 23 \\ \hline 1334 \end{array}$$

$$\begin{array}{r} 60 \\ \times 20 \\ \hline 1200 \end{array}$$

$$\begin{array}{r} 5. \quad 6407 \\ \times 186 \\ \hline 1191702 \end{array}$$

$$\begin{array}{r} 6000 \\ \times 200 \\ \hline 1200000 \end{array}$$

$$\begin{array}{r} 6. \quad 5234 \\ \times 89 \\ \hline 465826 \end{array}$$

$$\begin{array}{r} 5000 \\ \times 90 \\ \hline 450000 \end{array}$$

$$\begin{array}{r} 7. \quad 842 \\ \times 24 \\ \hline 20208 \end{array}$$

$$\begin{array}{r} 800 \\ \times 20 \\ \hline 16000 \end{array}$$

$$\begin{array}{r} 8. \quad 665 \\ \times 18 \\ \hline 11970 \end{array}$$

$$\begin{array}{r} 700 \\ \times 20 \\ \hline 14000 \end{array}$$

$$\begin{array}{r} 9. \quad 769 \\ \times 115 \\ \hline 88435 \end{array}$$

$$\begin{array}{r} 800 \\ \times 100 \\ \hline 80000 \end{array}$$

$$\begin{array}{r} 10. \quad 249 \\ \times 385 \\ \hline 95865 \end{array}$$

$$\begin{array}{r} 200 \\ \times 400 \\ \hline 80000 \end{array}$$

$$\begin{array}{r} 11. \quad 1425 \\ \times 614 \\ \hline 874950 \end{array}$$

$$\begin{array}{r} 1000 \\ \times 600 \\ \hline 600000 \end{array}$$

$$\begin{array}{r} 12. \quad 2619 \\ \times 342 \\ \hline 895698 \end{array}$$

$$\begin{array}{r} 3000 \\ \times 300 \\ \hline 900000 \end{array}$$

Now use your calculator to find each product. Are your results close to your estimates?

Multiplication Constant

Enter each program. Above each [=] print what the display shows. Explain what your calculator is doing.

1. [C] [5] [×] [3] [=] 15. [9] [=] 45. [6] [=] 30. [4] [=] 20. [8] [=] 40.

multiplying each number by 5

2. [C] [1] [2] [×] [4] [=] 48. [6] [=] 72. [9] [=] 108. [3] [=] 36. [7] [=] 84.

multiplying each number by 12

Complete each table. Use the multiplication constant.

3. × 28

26	728
84	2352
19	532
37	1036

4. × 45

13	585
46	2070
93	4185
112	5040

5. × 32

176	5632
283	9056
461	14752
775	24800

6. × 105

23	2415
34	3570
58	6090
67	7035

7. × 63

72	4536
88	5544
94	5922
107	6741

8. × 14

85	1190
170	2380
232	3248
647	9058

Helen bought 15 of each of the following items.
How much did she spend on each item?

9. caps at \$6 \$90
10. shirts at \$9 \$135
11. shorts at \$8 \$120
12. pairs of socks at \$3 \$45
13. pairs of shoes at \$16 \$240

Airplane Math

Model	Cruising Speed in kilometres per hour	Passengers
Boeing 727	885	144
Boeing 747	965	365
Douglas DC8	885	210
Douglas DC9	870	102
Lockheed 1011	965	257

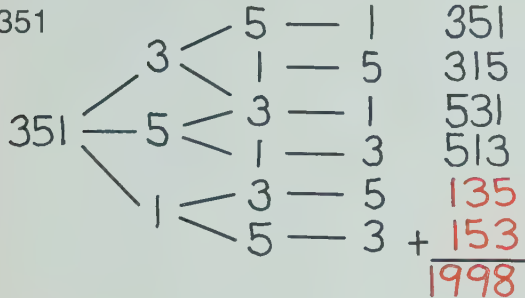
- How many more passengers does a Boeing 747 fly than a Lockheed 1011?
108
- How far does a DC9 fly in 5 h?
4350 km
- How many passengers do 46 DC9's fly?
4692
- How many passengers do one Boeing 727 and one Lockheed 1011 fly?
401
- How much faster does a Boeing 747 fly than a Boeing 727?
80 km/h
- Which planes fly 3540 km in 4 h?
Boeing 727 and Douglas DC8
- How many more passengers does a Lockheed 1011 fly than a Boeing 727?
113
- How many passengers do 58 Boeing 727's fly?
8352

Arrangements of Digits

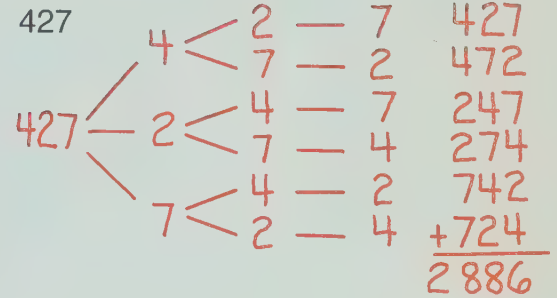
The solutions to many problems in fields such as biology, economics, and physics depend upon rearranging digits.

Rearrange the digits in each numeral to make all the possible numerals. Then calculate the sum. The first exercise is started.

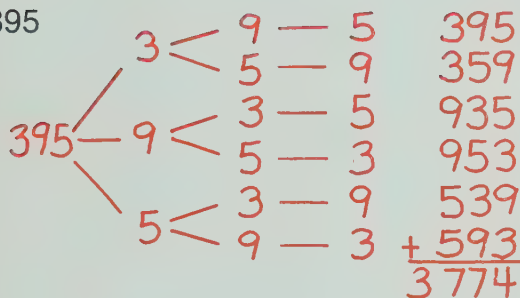
1. 351



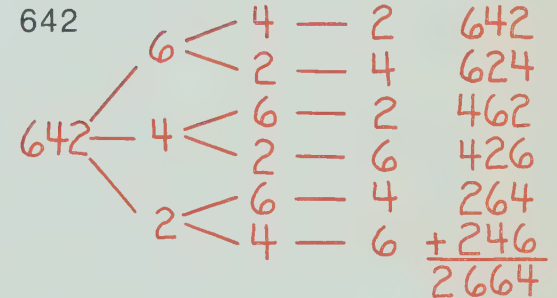
2. 427



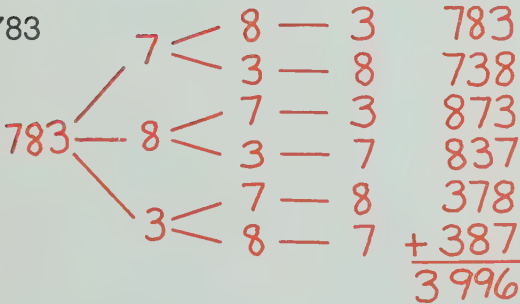
3. 395



4. 642

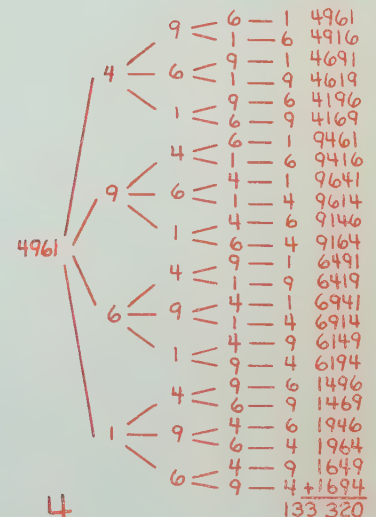


5. 783



6. 4961

(Do this one on a separate sheet of paper.)



Now match each sum with a numeral below.

3774 3.
2886 2.

3996 5.
133 320 6.

2664 4.
1998 1.

If you cannot make a match, check that rearrangement.

123 has 6 possible arrangements.

1234 has 24 possible arrangements.

How many arrangements are possible using 123 456 789? 362 880

Name _____

Decimal Tenths, Hundredths, Thousandths

Use only the $\boxed{1}$, $\boxed{0}$, $\boxed{+}$, $\boxed{\cdot}$, and $\boxed{=}$ keys to enter each number. Then show the expanded form. The first exercise is done for you.

1. 2.634

\boxed{C} $\boxed{0}$ $\boxed{+}$ $\boxed{1}$ $\boxed{=}$ $\boxed{=}$

Display

2.

$\boxed{+}$ $\boxed{\cdot}$ $\boxed{1}$ $\boxed{=}$ $\boxed{=}$ $\boxed{=}$ $\boxed{=}$ $\boxed{=}$ $\boxed{=}$

2.6

$\boxed{+}$ $\boxed{\cdot}$ $\boxed{0}$ $\boxed{1}$ $\boxed{=}$ $\boxed{=}$ $\boxed{=}$

2.63

$\boxed{+}$ $\boxed{\cdot}$ $\boxed{0}$ $\boxed{0}$ $\boxed{1}$ $\boxed{=}$ $\boxed{=}$ $\boxed{=}$ $\boxed{=}$

2.634

2 ones + 6 tenths + 3 hundredths + 4 thousandths

2. 14.9

1 ten + 4 ones + 9 tenths

3. 7.25

7 ones + 2 tenths + 5 hundredths

4. 23.81

2 tens + 3 ones + 8 tenths + 1 hundredth

5. 7.936

7 ones + 9 tenths + 3 hundredths + 6 thousandths

6. 25.125

2 tens + 5 ones + 1 tenth + 2 hundredths + 5 thousandths

7. 101.1

1 hundred + 1 one + 1 tenth

8. 54.23

5 tens + 4 ones + 2 tenths + 3 hundredths

9. 0.714

7 tenths + 1 hundredth + 4 thousandths

10. 2.09

2 ones + 9 hundredths

11. 4.007

4 ones + 7 thousandths

12. 16.5

1 ten + 6 ones + 5 tenths

Track and Field Math

Circle the greatest and the least result for each event.
Then subtract the least from the greatest in each event.

Standing Long Jump

1.22 m

1.58 m

1.45 m

1.66 m

1.61 m

1.32 m

0.44

M

Running Long Jump

3.46 m

3.38 m

3.34 m

3.49 m

3.57 m

3.42 m

0.23

S



High Jump

1.27 m

1.21 m

1.16 m

1.28 m

1.24 m

1.11 m

0.17

D

Shot Put

4.34 m

4.37 m

4.26 m

4.30 m

4.35 m

4.24 m

0.13

L

50 m Race

10.25 s

8.64 s

9.78 s

8.91 s

10.54 s

9.87 s

1.9

E

100 m Race

15.31 s

14.64 s

13.48 s

13.95 s

12.98 s

15.09 s

2.33

A

200 m Race

35.78 s

34.80 s

33.42 s

33.48 s

38.00 s

32.08 s

5.92

I

800 m Race

5.12 min

4.05 min

3.93 min

4.87 min

3.69 min

4.78 min

1.43

C

Print the letter below its number.

0.17	1.9	1.43	5.92	0.44	2.33	0.13	0.23
D	E	C	I	M	A	L	S

What did you spell? DECIMALS

Name _____

Rounding Decimals

Consider the rounding of each number. If the number will be rounded down, put a check (✓) beside it. Add the numbers to be rounded down. If the sum is 20, you have correctly identified the numbers to be rounded down. Then round each number. The first exercise is done for you.

1. Round to the nearest tenth.

0.462	_____	0.5
9.83	✓	9.8
7.445	✓	7.4
4.15	_____	4.2
2.725	✓	2.7

$$9.83 + 7.445 + 2.725 = 20$$

2. Round to the nearest one.

12.39	✓	12
4.821	_____	5
6.42	✓	6
1.19	✓	1
13.82	_____	14

3. Round to the nearest hundredth.

5.783	✓	5.78
14.266	_____	14.27
12.194	✓	12.19
8.117	_____	8.12
2.023	✓	2.02

4. Round to the nearest tenth.

13.95	_____	14.0
8.695	_____	8.7
11.347	✓	11.3
2.913	✓	2.9
5.74	✓	5.7

5. Round to the nearest one.

7.29	✓	7
2.46	✓	2
13.64	_____	14
9.9	_____	10
10.25	✓	10

6. Round to the nearest tenth.

18.195	_____	18.2
0.74	✓	0.7
0.934	✓	0.9
0.87	_____	0.9
18.326	✓	18.3

7. Round to the nearest hundredth.





5.959	_____	5.96
3.434	✓	3.43
7.272	✓	7.27
8.688	_____	8.69
9.294	✓	9.29

8. Round to the nearest one.

14.257	✓	14
3.33	✓	3
14.972	_____	15
2.413	✓	2
14.693	_____	15

Swimming Math

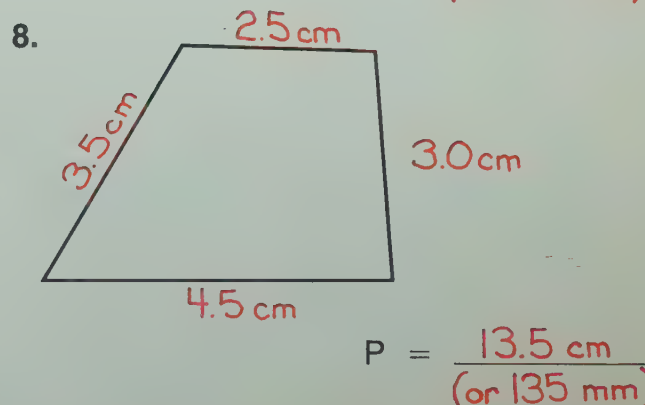
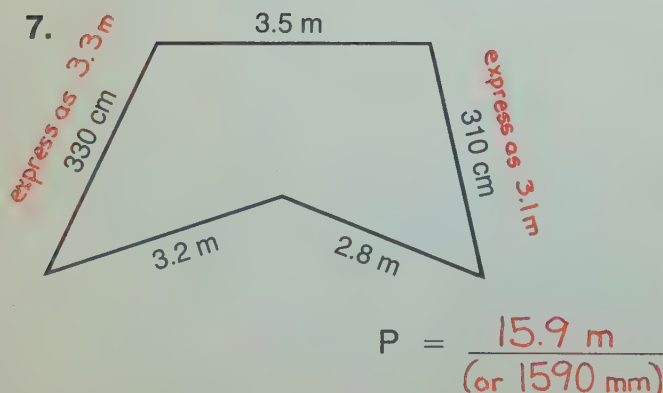
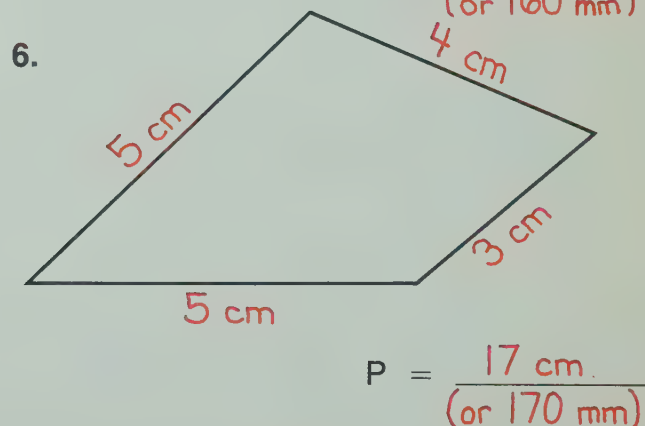
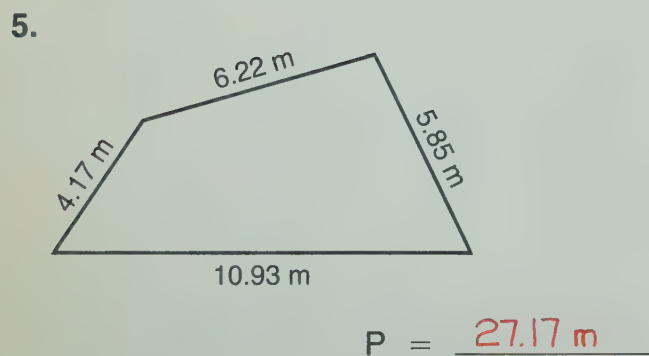
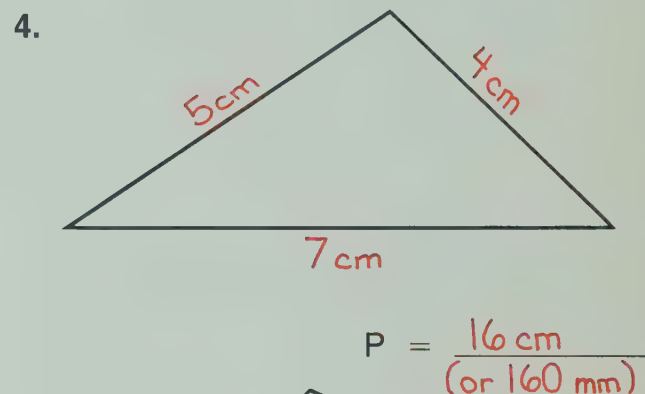
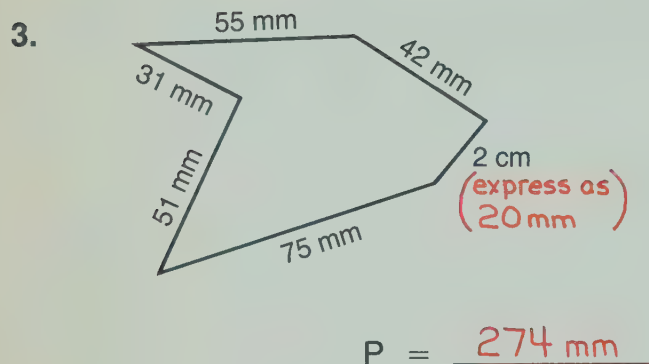
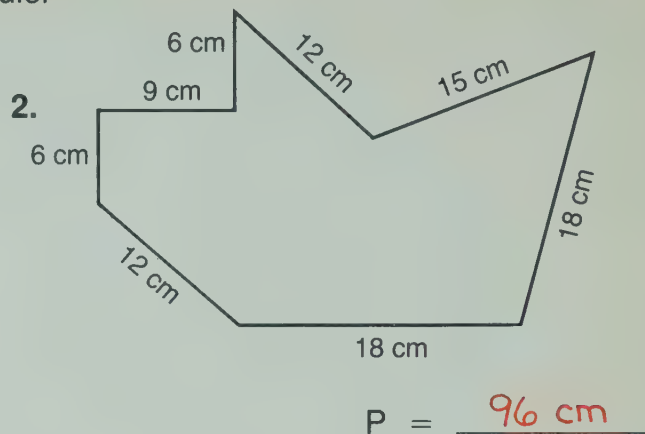
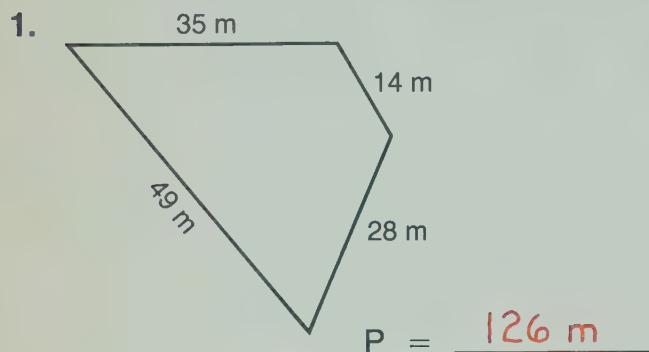
Time to Swim 50 m

	Butterfly 	Backstroke 	Breaststroke 	Freestyle 
Fiona	28.79 s	31.46 s	36.85 s	31.90 s
Chu	29.55 s	31.27 s	35.48 s	32.88 s
Inga	28.35 s	32.17 s	36.43 s	31.94 s
Ted	31.22 s	32.80 s	33.49 s	31.65 s

- Fiona swam 50 m of each stroke. How long did it take?
129 s
- How much faster is Inga than Ted at swimming 50 m of butterfly?
2.87 s
- How much faster is Chu at the backstroke than the breaststroke?
4.21 s
- Ted swam 50 m of each stroke. How long did it take?
129.16 s
- How much faster is Ted than Chu at swimming 50 m of freestyle?
1.23 s
- How much faster is Inga's fastest stroke than her slowest?
8.08 s
- Chu swam 50 m of each stroke. How long did it take?
129.18 s
- Fiona swam 50 m of backstroke. Then Inga swam 50 m of backstroke. How long did this take?
63.63 s
- Inga swam 50 m of each stroke. How long did it take?
128.89 s
- A race consists of 50 m of each stroke for each swimmer. How much faster was the fastest person than the slowest?
0.29 s
1. gives Fiona
4. gives Ted
7. gives Chu (slowest)
9. gives Inga (fastest)

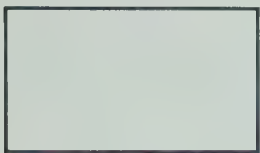
Perimeter

Calculate the perimeter of each shape. Use a ruler to measure the lengths that are not given.




Area

Calculate the area of each shape.

1.  $A = \underline{1372 \text{ m}^2}$

2.  $A = \underline{357 \text{ cm}^2}$

3.  $A = \underline{1444 \text{ mm}^2}$

	length	width	Area
4.	35 cm	22 cm	770 cm^2
5.	24 m	24 m	576 m^2
6.	125 m	55 m	6875 m^2
7.	29 cm	29 cm	841 cm^2
8.	76 cm	34 cm	2584 cm^2

Solve each problem. Perimeter may be involved.

9. A picture is 24 cm high and 16 cm wide. Find its area.
 $\underline{384 \text{ cm}^2}$

10. A wall is 240 cm high and 365 cm long. Find its area.
 $\underline{87600 \text{ cm}^2}$

11. Lloyd is putting a fence around a field 62 m long and 38 m wide. How much land will be inside the fence? $\underline{2356 \text{ m}^2}$
How much fencing will he need?
 $\underline{200 \text{ m}}$

12. Sumi is framing a picture. It is 42 cm long and 24 cm high. How many centimetres of framing does she need?
 $\underline{132 \text{ cm}}$

13. The area of a driveway is 75 m^2 . It is 15 m long. How wide is it?
 $\underline{5 \text{ m}}$

14. Carina is putting wallpaper on a wall. The wall is 240 cm high and 412 cm long. How much wall will be covered with paper?
 $\underline{98880 \text{ cm}^2}$

15. Lance is cutting the grass on a lawn. It is 18 m long and 4 m wide. How much lawn is there to cut?
 $\underline{72 \text{ m}^2}$

16. The area of a field is 432 m^2 . The field is 18 m wide. How long is it?
 $\underline{24 \text{ m}}$
How much fencing would be needed to go around it?
 $\underline{84 \text{ m}}$

Average

The total snowfall in Deerland for each year from 1945 to 1950 is given in centimetres. Calculate the average annual snowfall for this time period.

in a year

1945	1946	1947	1948	1949	1950
90	74	82	95	85	78

$$\boxed{C} \ 90 \boxed{+} \ 74 \boxed{+} \ 82 \boxed{+} \ 95 \boxed{+} \ 85 \boxed{+} \ 78 \boxed{=} \ 504 \boxed{\div} \ 6 \boxed{=} \ 84$$

Find the total snowfall.

Divide by the number of years.

The average annual snowfall is 84 cm.

1. The total rainfall for each month in Rainy Lake is given in millimetres. Calculate the average monthly rainfall.

Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
141	186	154	201	216	211	193	187	166	142	153	138

174 mm

2. Giovanna recorded the number of vehicles that passed the corner of Elm Street and 14th Avenue between 8:00 and 8:30 each morning. Calculate the average number of vehicles.

Mon.	Tues.	Wed.	Thurs.	Fri.
151	144	156	152	147

150

3. The Happy Time Theatre group sold tickets to their shows in advance. Calculate the average number of advance tickets sold for a show.

Jan. 13	Jan. 14	Jan. 15	Jan. 20	Jan. 21	Jan. 22
418	522	526	389	540	527

487

For one show all seats were sold. Which one was that? Jan. 21

Doubling Power

Many problems in fields such as biology and medicine are solved using doubling power.

Consider doubling 2, doubling that result, then doubling the next result, and so on. These numbers are the powers of 2.

2 4 8 16 ...

You can use your calculator to double.

Keep pressing equal.

What is the largest power of 2 that the display will show? 67 108 864

Job 1

Rake leaves
For 16 d (days)
Pay: \$100 each day

Job 2

Rake leaves
For 16 d
Pay: \$2 for 1st day
\$4 for 2nd day
\$8 for 3rd day
and so on, for 16 d

Guess which job pays better.

Then calculate which one pays better.

How much better? $\$131\,070 - \$1600 = \$129\,470$

Hint: As you calculate each day's pay for Job 2, be sure to record it. You need to find the total pay.

Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Pay	2	4	8	16	32	64	128	256	512	1024	2048	4096	8192	16384	32768
															16
															65536

Patterns

Calculate only as many products as you need to, to find each pattern. Complete each pattern without using your calculator. Then use the multiplication constant to check. (See page 27.)

$$\begin{aligned}
 1. \quad 3 \times 37\,037 &= \underline{111\,111} \\
 6 \times 37\,037 &= \underline{222\,222} \\
 9 \times 37\,037 &= \underline{333\,333} \\
 12 \times 37\,037 &= \underline{444\,444} \\
 15 \times 37\,037 &= \underline{555\,555} \\
 18 \times 37\,037 &= \underline{666\,666} \\
 21 \times 37\,037 &= \underline{777\,777} \\
 24 \times 37\,037 &= \underline{888\,888} \\
 27 \times 37\,037 &= \underline{999\,999}
 \end{aligned}$$

$$\begin{aligned}
 2. \quad 3 \times 3367 &= \underline{10\,101} \\
 6 \times 3367 &= \underline{20\,202} \\
 9 \times 3367 &= \underline{30\,303} \\
 12 \times 3367 &= \underline{40\,404} \\
 15 \times 3367 &= \underline{50\,505} \\
 18 \times 3367 &= \underline{60\,606} \\
 21 \times 3367 &= \underline{70\,707} \\
 24 \times 3367 &= \underline{80\,808} \\
 27 \times 3367 &= \underline{90\,909}
 \end{aligned}$$

$$\begin{aligned}
 3. \quad 5 \times 5 &= \underline{25} \\
 55 \times 5 &= \underline{275} \\
 555 \times 5 &= \underline{2\,775} \\
 5\,555 \times 5 &= \underline{27\,775} \\
 55\,555 \times 5 &= \underline{277\,775} \\
 555\,555 \times 5 &= \underline{2\,777\,775} \\
 5\,555\,555 \times 5 &= \underline{27\,777\,775}
 \end{aligned}$$

$$\begin{aligned}
 4. \quad 88 \times 8 &= \underline{704} \\
 888 \times 8 &= \underline{7\,104} \\
 8\,888 \times 8 &= \underline{71\,104} \\
 88\,888 \times 8 &= \underline{711\,104} \\
 888\,888 \times 8 &= \underline{7\,111\,104} \\
 8\,888\,888 \times 8 &= \underline{71\,111\,104}
 \end{aligned}$$

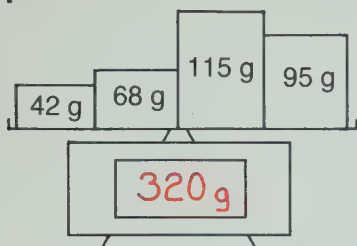
$$\begin{aligned}
 5. \quad 1 \times 99\,999 &= \underline{99\,999} \\
 2 \times 99\,999 &= \underline{199\,998} \\
 3 \times 99\,999 &= \underline{299\,997} \\
 4 \times 99\,999 &= \underline{399\,996} \\
 5 \times 99\,999 &= \underline{499\,995} \\
 6 \times 99\,999 &= \underline{599\,994} \\
 7 \times 99\,999 &= \underline{699\,993} \\
 8 \times 99\,999 &= \underline{799\,992} \\
 9 \times 99\,999 &= \underline{899\,991}
 \end{aligned}$$

$$\begin{aligned}
 6. \quad 1 \times 9109 &= \underline{9\,109} \\
 2 \times 9109 &= \underline{18\,218} \\
 3 \times 9109 &= \underline{27\,327} \\
 4 \times 9109 &= \underline{36\,436} \\
 5 \times 9109 &= \underline{45\,545} \\
 6 \times 9109 &= \underline{54\,654} \\
 7 \times 9109 &= \underline{63\,763} \\
 8 \times 9109 &= \underline{72\,872} \\
 9 \times 9109 &= \underline{81\,981}
 \end{aligned}$$

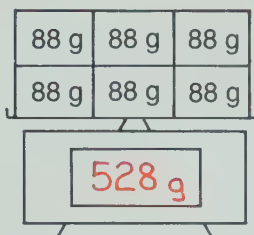
Mass

Calculate the total mass on each scale.

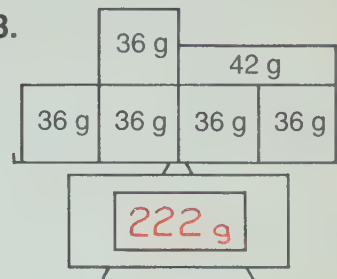
1.



2.

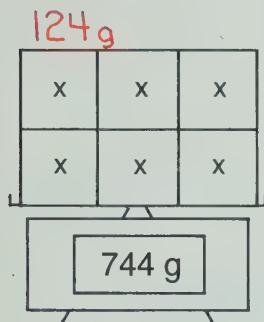


3.

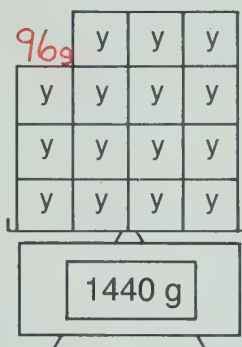


Calculate the mass of one box.

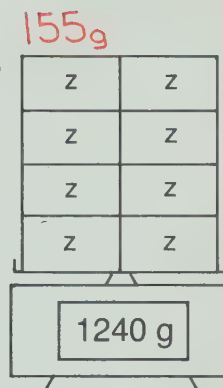
4.



5.



6.

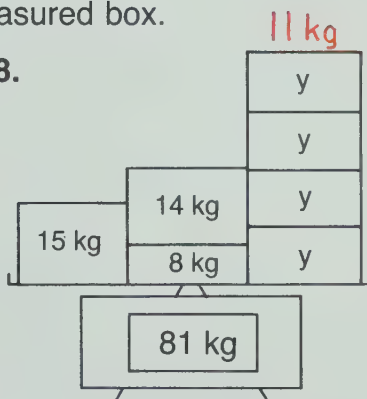


Calculate the mass of one unmeasured box.

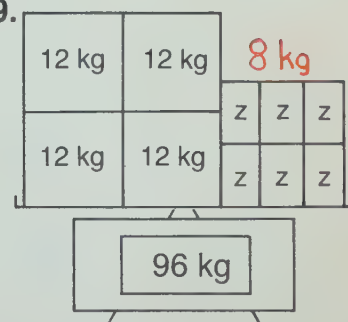
7.



8.



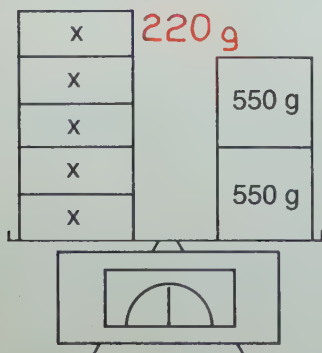
9.



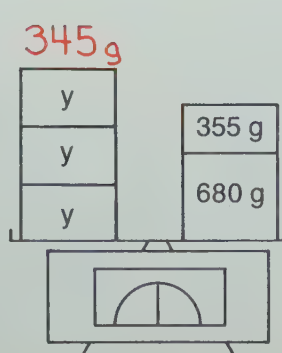
The scales are balanced.

Calculate the mass of one unmeasured box.

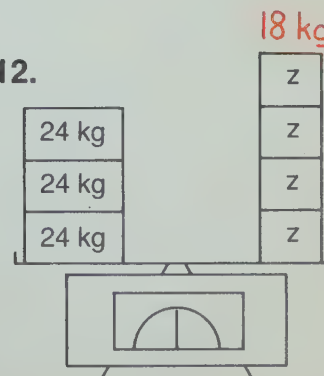
10.



11.



12.



Comparison Shopping

Many people compare prices when grocery shopping.
The unit price tells them which costs the least.



Calculate the unit price.

$$\boxed{C} \quad 235 \quad \boxed{\div} \quad 550 \quad \boxed{=} \quad 0.4272727 \quad \text{or} \quad 0.43$$

cost number rounded
in cents of units to nearest
 (grams) hundredth

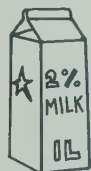
\$2.35

The unit price is 0.43¢/g.

43 hundredths of one cent

Calculate the unit price of each item.
Circle the item that costs the least.

1.



95¢

95¢/L



\$1.84

\$0.92/L



\$2.69

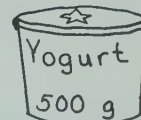
\$0.90/L

2.



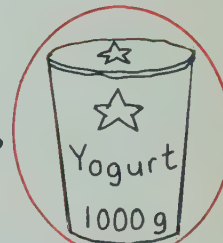
75¢

0.43¢/g



\$1.69

0.34¢/g



\$2.79

0.28¢/g

3.



\$2.69

0.40¢/g



\$2.85

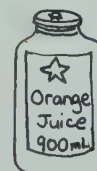
0.41¢/g

4.



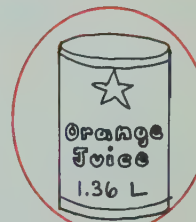
59¢

0.21¢/mL



\$1.59

0.18¢/mL

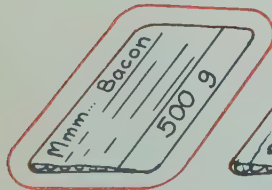


\$1.99

0.15¢/mL

1.36 L
= 1360 mL

5.



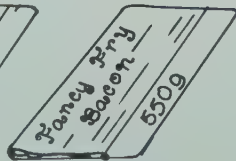
\$3.25

0.65¢/g



\$2.99

0.66¢/g



\$3.69

0.67¢/g

6. Which usually costs less, the large size or the small size?

large size

Answers will vary for ex. 7 and 8. Samples given.

7. Give some reasons why the largest might not be the best buy.

if the larger quantity cannot be used
or stored until it is all needed

8. When considering different brands, what should you think of?

as well as price, the quality may vary

Name _____

Fractions as Decimals

Recall

$$\begin{array}{c} \times 25 \\ \frac{3}{4} = \frac{75}{100} \\ \times 25 \\ \frac{3}{4} = 0.75 \end{array}$$

Try $\boxed{C} \boxed{3} \boxed{\div} \boxed{4} \boxed{=} \underline{0.75}$

$\frac{3}{4}$ also means $3 \div 4$.

Express each fraction as a decimal.

1. $\frac{1}{8} = \underline{0.125}$

2. $\frac{4}{5} = \underline{0.8}$

3. $\frac{3}{8} = \underline{0.375}$

4. $\frac{2}{3} = \underline{0.666\ 666}$

5. $\frac{3}{5} = \underline{0.6}$

6. $\frac{1}{6} = \underline{0.166\ 666\ 6}$

Express each fraction as a decimal. Then complete each statement with $>$ or $<$.

7. $\frac{1}{4} = \underline{0.25}$

8. $\frac{5}{8} = \underline{0.625}$

9. $\frac{7}{8} = \underline{0.875}$

$\frac{3}{8} = \underline{0.375}$

$\frac{1}{2} = \underline{0.5}$

$\frac{5}{6} = \underline{0.833\ 333\ 3}$

$\frac{1}{4} < \frac{3}{8}$

$\frac{5}{8} > \frac{1}{2}$

$\frac{7}{8} > \frac{5}{6}$

10. $\frac{13}{4} = \underline{3.25}$

11. $\frac{12}{8} = \underline{1.5}$

12. $\frac{1}{3} = \underline{0.333\ 333\ 3}$

$\frac{16}{5} = \underline{3.2}$

$\frac{16}{10} = \underline{1.6}$

$\frac{3}{8} = \underline{0.375}$

$\frac{13}{4} > \frac{16}{5}$

$\frac{12}{8} < \frac{16}{10}$

$\frac{1}{3} < \frac{3}{8}$

13. $\frac{15}{4} = \underline{3.75}$

14. $\frac{2}{5} = \underline{0.4}$

15. $\frac{4}{5} = \underline{0.8}$

$\frac{11}{3} = \underline{3.666\ 666\ 6}$

$\frac{3}{8} = \underline{0.375}$

$\frac{7}{8} = \underline{0.875}$

$\frac{15}{4} > \frac{11}{3}$

$\frac{2}{5} > \frac{3}{8}$

$\frac{4}{5} < \frac{7}{8}$

Name _____

Adding and Subtracting Large Numbers

Calculate the total area of the four largest oceans.

Pacific	196 140 270 km ²
Atlantic	96 716 450 km ²
Indian	82 216 450 km ²
Arctic	14 806 530 km ²

The calculator cannot display 196 140 270. It can only display 8 digits.

It is necessary to calculate the sum in two parts.

$$\begin{array}{r}
 196 \overline{) 140\,270} \\
 96 \overline{) 716\,450} \\
 82 \overline{) 216\,450} \\
 + 14 \overline{) 806\,530} \\
 \hline
 1 \overline{) 879\,700} \\
 389 \overline{) 879\,700} \\
 \hline
 389 \overline{) 879\,700}
 \end{array}$$

Separate the millions.

Calculate the sum of the numbers without the millions.

Calculate the sum of the millions. Include the million carried from the last sum.

Combine.

Calculate each sum.

1.

$$\begin{array}{r}
 972 \overline{) 836\,451} \\
 328 \overline{) 112\,019} \\
 476 \overline{) 283\,075} \\
 + 991 \overline{) 425\,867} \\
 \hline
 1 \overline{) 657\,412} \\
 2768 \overline{) 657\,412} \\
 \hline
 2768 \overline{) 657\,412}
 \end{array}$$

2.

$$\begin{array}{r}
 111 \overline{) 222\,333} \\
 444 \overline{) 555\,666} \\
 777 \overline{) 888\,999} \\
 999 \overline{) 888\,777} \\
 666 \overline{) 555\,444} \\
 + 333 \overline{) 222\,111} \\
 \hline
 3 \overline{) 333\,330} \\
 3333 \overline{) 333\,330} \\
 \hline
 3333 \overline{) 333\,330}
 \end{array}$$

3.

$$\begin{array}{r}
 105 \overline{) 394\,672} \\
 28 \overline{) 476\,925} \\
 514 \overline{) 382\,917} \\
 442 \overline{) 805\,947} \\
 + 613 \overline{) 267\,388} \\
 \hline
 2 \overline{) 327\,849} \\
 1704 \overline{) 327\,849} \\
 \hline
 1704 \overline{) 327\,849}
 \end{array}$$

4.

$$\begin{array}{r}
 416 \overline{) 489\,498} \\
 613 \overline{) 283\,174} \\
 99 \overline{) 253\,417} \\
 442 \overline{) 283\,669} \\
 + 85 \overline{) 174\,920} \\
 \hline
 1 \overline{) 484\,678} \\
 1656 \overline{) 484\,678} \\
 \hline
 1656 \overline{) 484\,678}
 \end{array}$$

5.

$$\begin{array}{r}
 130 \overline{) 079\,641} \\
 25 \overline{) 873\,256} \\
 369 \overline{) 875\,431} \\
 95 \overline{) 984\,370} \\
 + 140 \overline{) 390\,285} \\
 \hline
 3 \overline{) 202\,983} \\
 762 \overline{) 202\,983} \\
 \hline
 762 \overline{) 202\,983}
 \end{array}$$

6.

$$\begin{array}{r}
 115 \overline{) 249\,650} \\
 70 \overline{) 504\,955} \\
 38 \overline{) 397\,645} \\
 + 844 \overline{) 132\,682} \\
 \hline
 1 \overline{) 284\,932} \\
 1068 \overline{) 284\,932} \\
 \hline
 1068 \overline{) 284\,932}
 \end{array}$$

Now try calculating the difference.

7.

$$\begin{array}{r}
 3864 \overline{) 927\,650} \\
 - 1756 \overline{) 099\,897} \\
 \hline
 2108 \overline{) 827\,753}
 \end{array}$$

8.

$$\begin{array}{r}
 7025 \overline{) 943\,047} \\
 - 3948 \overline{) 039\,528} \\
 \hline
 3077 \overline{) 903\,519}
 \end{array}$$

9.

$$\begin{array}{r}
 1404 \overline{) 5799\,625} \\
 - 8341 \overline{) 1819\,956} \\
 \hline
 5703 \overline{) 3979\,669}
 \end{array}$$

Timely Math

Suppose your heart beats 78 times in 1 min.
How many times does it beat in 1 h (hour)?
in 1 d (day)? in 1 week? in 1 a (year)?
Complete the program to find out.

$$\begin{array}{ccccccc} \boxed{C} & 78 & \boxed{\times} & 60 & \boxed{\times} & 24 & \boxed{\times} & 7 & \boxed{\times} & 52 & \boxed{=} & 40\,884\,480 \\ & & & \text{minutes} & & \text{hours} & & \text{days} & & \text{weeks} & & \\ & & & \text{in an} & & \text{in a} & & \text{in a} & & \text{in a} & & \\ & & & \text{hour} & & \text{day} & & \text{week} & & \text{year} & & \end{array}$$

1 h 4860 times
1 d 112 320
1 week 786 240
1 a 40 884 480

Develop a strategy to solve each problem.
Then calculate the answer.

1. Give your age in years, weeks, days, hours, minutes, and seconds.

Answers will vary. Example: 11 a, 572 weeks,
4004 d, 96 096 h, 5 765 760 min, 345 945 600 s

2. Choose a book you like. Count the words on one page. Find the approximate number of words in the book.

Answers will vary.

3. A one-dollar bill is about as thick as a sheet of paper. How thick would 1 000 000 one-dollar bills be?

Answers will vary. Example: 10 000 cm or 100 m

4. Imagine a stack of dimes 1 km high. How many dollars would it be worth?

1 dime is 1 mm thick \therefore \$100 000

Name _____

44

Estimating Quotients

When dividing with your calculator, it is important to know if your results are reasonable.

You can estimate to find out if your results are reasonable.

Round to numbers that are easy to divide mentally.

Estimate each result. The first exercise is done for you.
It shows you the thinking steps.

$$1. \begin{array}{r} 3654 \div 87 \\ \hline 3600 \div 90 = 40 \end{array}$$

Round 87 to the nearest 10. 90
Round 3612 to the nearest hundred or thousand that can be divided evenly by 90. 3600
 $3600 \div 90 = 40$

Estimates will vary.

$$2. \begin{array}{r} 1365 \div 21 \\ \hline 1400 \div 20 = 70 \end{array}$$

$$3. \begin{array}{r} 3901 \div 47 \\ \hline 4000 \div 50 = 80 \end{array}$$

$$4. \begin{array}{r} 13545 \div 63 \\ \hline 12000 \div 60 = 200 \end{array}$$

$$5. \begin{array}{r} 15232 \div 28 \\ \hline 15000 \div 30 = 500 \end{array}$$

$$6. \begin{array}{r} 18462 \div 51 \\ \hline 20000 \div 50 = 400 \end{array}$$

$$7. \begin{array}{r} 33108 \div 62 \\ \hline 30000 \div 60 = 500 \end{array}$$

$$8. \begin{array}{r} 70728 \div 84 \\ \hline 72000 \div 80 = 900 \end{array}$$

$$9. \begin{array}{r} 109053 \div 189 \\ \hline 100000 \div 200 = 500 \end{array}$$

$$10. \begin{array}{r} 144225 \div 225 \\ \hline 140000 \div 200 = 700 \end{array}$$

$$11. \begin{array}{r} 262080 \div 832 \\ \hline 240000 \div 800 = 300 \end{array}$$

Now use your calculator to find each quotient.
Are the results close to your estimates?

Stress that the estimated quotients are to be found mentally. How close the estimates are to the calculated quotients is not important; rather, knowing that an estimate of 40 and a quotient of 382 indicates an error is important.

OFF

The Division Constant

Enter each program. Above each [=] print what the display shows.
Explain what your calculator is doing.

1.

C

2

4

÷

8

=

3

2

=

7

2

=

1

6

=

3.

4.

9.

2.

dividing each number by 8

2.

C

3

6

÷

6

=

4

8

=

1

2

=

5

4

=

6.

8.

2.

9.

dividing each number by 6

Complete each table. Use the division constant.
Round each answer to the nearest tenth.

3.

÷ 46

1 937	42.1
28 215	613.4
61 193	1330.3
47 035	1022.5

4.

÷ 53

7 250	136.8
18 693	352.7
84 925	1602.4
63 455	1197.3

5.

÷ 87

66 450	763.8
93 215	1071.4
74 146	852.3
83 724	962.3

6.

÷ 251

64 249	256.0
125 830	501.3
265 477	1057.7
490 652	1954.8

7.

÷ 493

183 240	371.7
372 193	755.0
648 791	1316.0
497 600	1009.3

8.

÷ 782

238 641	305.2
497 416	636.1
613 287	784.3
905 384	1157.8

Office supplies for one year included these items.
Find the quantity available for one week of the year.
Round each to the nearest tenth.

9.

115 packages of letterhead paper

2.2

10.

825 packages of typing paper

15.9

11.

1640 packages of photocopy paper

31.5

12.

780 packages of ballpoint pens

15.

13.

95 packages of typewriter ribbons

1.8

14.

466 packages of letter envelopes

9.0

15.

235 packages of envelopes #654

4.5

16.

164 packages of envelopes #659

3.2

Remainders

500 desks were delivered to a new school. Each of 14 classrooms were to receive the same number of desks. How many did each classroom receive? How many were left?

$$\boxed{C} \quad 500 \quad \boxed{\div} \quad 14 \quad \boxed{=} \quad \underline{35.714285}$$

Each classroom received 35 desks.

But how many were left?

$$\boxed{C} \quad 35 \quad \boxed{\times} \quad 14 \quad \boxed{=} \quad \underline{490}$$

whole number
part of quotient

divisor

$$\boxed{C} \quad 500 \quad \boxed{-} \quad 490 \quad \boxed{=} \quad \underline{10}$$

dividend

product

Sometimes this step is easy enough to do mentally.
This one was!

There were 10 desks left.

Think about why this method works. Then divide.
Show each result like this: $500 \div 14 = \underline{35 \text{ R}10}$.

$$1. \quad 73 \div 17 \quad \underline{4 \text{ R}5} \quad 2. \quad 87 \div 24 \quad \underline{3 \text{ R}15} \quad 3. \quad 93 \div 29 \quad \underline{3 \text{ R}6}$$

$$4. \quad 139 \div 16 \quad \underline{8 \text{ R}11} \quad 5. \quad 173 \div 35 \quad \underline{4 \text{ R}33} \quad 6. \quad 872 \div 41 \quad \underline{21 \text{ R}11}$$

$$7. \quad 1732 \div 83 \quad \underline{20 \text{ R}72} \quad 8. \quad 38\,428 \div 67 \quad \underline{573 \text{ R}37} \quad 9. \quad 43\,034 \div 88 \quad \underline{489 \text{ R}2}$$

$$10. \quad 7410 \div 184 \quad \underline{40 \text{ R}50}$$

$$11. \quad 87\,563 \div 213 \quad \underline{411 \text{ R}20}$$

$$12. \quad 279\,366 \div 678 \quad \underline{412 \text{ R}30}$$

$$13. \quad 433\,196 \div 215 \quad \underline{2014 \text{ R}186}$$

$$14. \quad 105\,936 \div 412 \quad \underline{257 \text{ R}52}$$

$$15. \quad 795\,000 \div 384 \quad \underline{2070 \text{ R}120}$$

Multiplying Large Numbers

Wonderful World Park had 7 451 329 visitors last year. Each visitor spent an average of \$23 in the the park. How much was spent by all the visitors?

The product of 7 451 329 and 23 cannot be shown in the display. It is more than 8 digits. It is necessary to find the product in parts.

$$\begin{array}{r}
 7\ 4\ 5\ 1\ 3\ 2\ 9 \\
 \times\ 2\ 3 \\
 \hline
 1\ 1\ 8\ 0\ 5\ 6\ 7 \\
 1\ 7\ 0\ 2\ 0\ 0\ 0\ 0\ 0 \\
 \hline
 1\ 7\ 1\ 3\ 8\ 0\ 5\ 6\ 7
 \end{array}$$

Separate the large number into two parts.

Multiply each part by 23.

Put in zeros as place holders.

Then add mentally.

The visitors spent \$171 380 567.

Calculate each product.

$$\begin{array}{r}
 1.\ 1\ 2\ 4\ 6\ 7\ 8\ 9\ 1 \\
 \times\ 7\ 8 \\
 \hline
 5\ 295\ 498 \\
 967\ 200\ 000 \\
 \hline
 972\ 495\ 498
 \end{array}$$

$$\begin{array}{r}
 2.\ 4\ 3\ 2\ 1\ 8\ 3\ 0\ 6 \\
 \times\ 5\ 7 \\
 \hline
 1\ 043\ 442 \\
 2\ 462\ 400\ 000 \\
 \hline
 2\ 463\ 443\ 442
 \end{array}$$

$$\begin{array}{r}
 3.\ 1\ 3\ 1\ 4\ 2\ 8\ 6\ 8\ 5 \\
 \times\ 3\ 4 \\
 \hline
 975\ 290 \\
 4\ 467\ 600\ 000 \\
 \hline
 4\ 468\ 575\ 290
 \end{array}$$

$$\begin{array}{r}
 4.\ 9\ 7\ 0\ 2\ 3\ 4\ 6\ 1 \\
 \times\ 7\ 2 \\
 \hline
 1\ 689\ 192 \\
 6\ 984\ 000\ 000 \\
 \hline
 6\ 985\ 689\ 192
 \end{array}$$

$$\begin{array}{r}
 5.\ 2\ 7\ 3\ 1\ 0\ 2\ 9\ 6 \\
 \times\ 5\ 8 \\
 \hline
 597\ 168 \\
 1\ 583\ 400\ 000 \\
 \hline
 1\ 583\ 997\ 168
 \end{array}$$

$$\begin{array}{r}
 6.\ 6\ 3\ 4\ 1\ 2\ 5\ 0\ 5 \\
 \times\ 4\ 1 \\
 \hline
 512\ 705 \\
 2\ 599\ 400\ 000 \\
 \hline
 2\ 599\ 912\ 705
 \end{array}$$

7. A newspaper uses 5 643 920 sheets of newsprint each week. How many sheets are used in a year?

$$\begin{array}{r}
 5\ 643\ 920 \\
 \times\ 52 \\
 \hline
 2\ 283\ 840 \\
 291\ 200\ 000 \\
 \hline
 293\ 483\ 840
 \end{array}$$

Fuel Consumption

Gasoline consumption of cars is given in litres per hundred kilometres (L/100 km).

Mike started a trip with a full tank of gasoline. He travelled 498 km. He refilled the tank with 44 L of gasoline. Calculate the fuel consumption.

Fuel Consumption = fuel (L) \div distance (km) \times 100

$$\boxed{C} \ 44 \boxed{\div} \ 498 \boxed{\times} \ 100 \boxed{=} \ 8.83534$$

Round to the nearest tenth.

The fuel consumption was 8.8 km/100 L.

Calculate the fuel consumption. Round to the nearest tenth.

1. Mr. Fonovic drove 275 km and used 36.5 L of gasoline.
13.3 L/100 km
2. Mrs. Paolucci used 34.2 L of fuel to drive 315 km.
10.9 L/100 km
3. Miss Steeles' odometer read 12 884 km when she started a trip. It read 13 489 km when she finished. She used 42.7 L of gasoline.
7.1 L/100 km
4. René started a trip with a full tank of fuel. He travelled 482 km before he refuelled. He needed 53.6 L of gasoline.
11.1 L/100 km
5. Zoe filled her fuel tank. One day she drove 175 km. The next day she drove 89 km. The third day she drove 101 km before refuelling. She needed 43.5 L of gasoline.
11.9 L/100 km
6. Bernie's odometer read 25 394 km when he filled his fuel tank. It read 26 006 km when he refuelled. He needed 48.9 L of gasoline.
8.0 L/100 km

List some factors that affect fuel consumption.

Answers will vary. Examples are: weather, engine size, load being carried, and engine maintenance.

Patterns

Calculate only as many products or quotients as you need to, to find each pattern. Complete each pattern without using your calculator. Then use the multiplication or division constant to check. (See pages 27 and 45.)

$$\begin{array}{l}
 1. \quad 7 \times 15\,873 = \underline{111\,111} \\
 14 \times 15\,873 = \underline{222\,222} \\
 21 \times 15\,873 = \underline{333\,333} \\
 28 \times 15\,873 = \underline{444\,444} \\
 35 \times 15\,873 = \underline{555\,555} \\
 42 \times 15\,873 = \underline{666\,666} \\
 49 \times 15\,873 = \underline{777\,777} \\
 56 \times 15\,873 = \underline{888\,888} \\
 63 \times 15\,873 = \underline{999\,999}
 \end{array}$$

$$\begin{array}{l}
 2. \quad 11\,111 \times 9 = \underline{99\,999} \\
 22\,222 \times 9 = \underline{199\,998} \\
 33\,333 \times 9 = \underline{299\,997} \\
 44\,444 \times 9 = \underline{399\,996} \\
 55\,555 \times 9 = \underline{499\,995} \\
 66\,666 \times 9 = \underline{599\,994} \\
 77\,777 \times 9 = \underline{699\,993} \\
 88\,888 \times 9 = \underline{799\,992} \\
 99\,999 \times 9 = \underline{899\,991}
 \end{array}$$

$$\begin{array}{l}
 3. \quad 111 \div 37 = \underline{3} \\
 222 \div 37 = \underline{6} \\
 333 \div 37 = \underline{9} \\
 444 \div 37 = \underline{12} \\
 555 \div 37 = \underline{15} \\
 666 \div 37 = \underline{18} \\
 777 \div 37 = \underline{21} \\
 888 \div 37 = \underline{24} \\
 999 \div 37 = \underline{27}
 \end{array}$$

$$\begin{array}{l}
 4. \quad 1 \div 9 = \underline{0.111\,111\,1} \\
 2 \div 9 = \underline{0.222\,222\,2} \\
 3 \div 9 = \underline{0.333\,333\,3} \\
 4 \div 9 = \underline{0.444\,444\,4} \\
 5 \div 9 = \underline{0.555\,555\,5} \\
 6 \div 9 = \underline{0.666\,666\,6} \\
 7 \div 9 = \underline{0.777\,777\,7} \\
 8 \div 9 = \underline{0.888\,888\,8}
 \end{array}$$

$$\begin{array}{l}
 5. \quad 1 \div 11 = \underline{0.090\,909} \\
 2 \div 11 = \underline{0.181\,818\,1} \\
 3 \div 11 = \underline{0.272\,727\,2} \\
 4 \div 11 = \underline{0.363\,636\,3} \\
 5 \div 11 = \underline{0.454\,545\,4} \\
 6 \div 11 = \underline{0.545\,454\,5} \\
 7 \div 11 = \underline{0.636\,363\,6} \\
 8 \div 11 = \underline{0.727\,272\,7} \\
 9 \div 11 = \underline{0.818\,181\,8}
 \end{array}$$

$$\begin{array}{l}
 6. \quad 1 \div 99 = \underline{0.010\,101} \\
 2 \div 99 = \underline{0.020\,202} \\
 3 \div 99 = \underline{0.030\,303} \\
 4 \div 99 = \underline{0.040\,404} \\
 5 \div 99 = \underline{0.050\,505} \\
 6 \div 99 = \underline{0.060\,606} \\
 7 \div 99 = \underline{0.070\,707} \\
 8 \div 99 = \underline{0.080\,808} \\
 9 \div 99 = \underline{0.090\,909}
 \end{array}$$

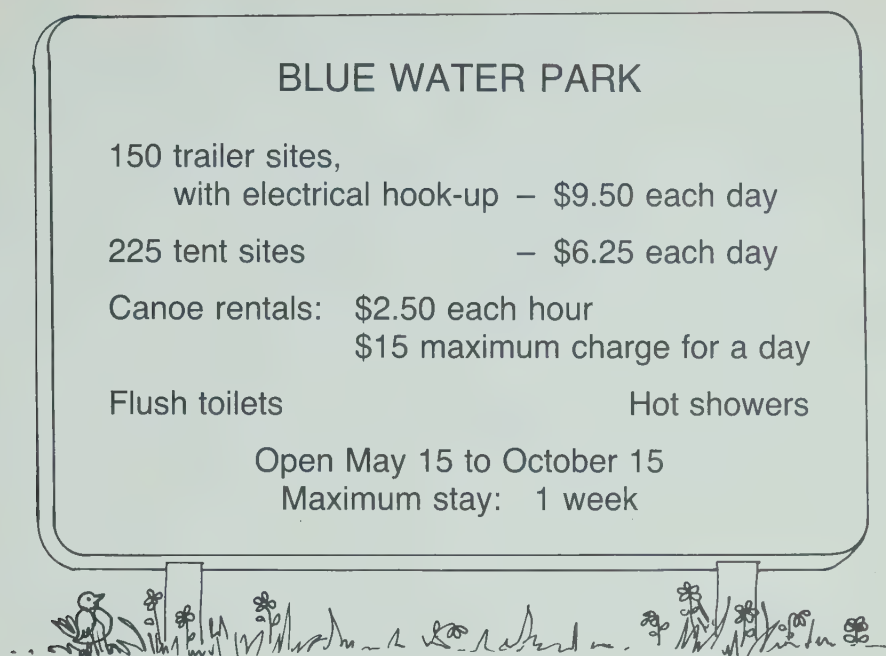
Name _____

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Know Your Decimals

12.964	3.25	9.654	0.1	7.26
7.249	9.055	15.8794	2.947	7.1989

- ☐ Add the decimals that are four-place decimals. 23.0783
- ☐ Subtract the least number from the greatest. 15.7794
- ☐ Add the decimals that have 5 in the hundredths place. 21.959
- ☐ Subtract the decimal closest to 3 from the decimal closest to 9. 6.108
- ☐ Add the decimals between 3 and 10. 43.6669
- ☐ Add the decimals that when rounded to the nearest tenth are 7.2. 14.4479
- ☐ Subtract the greatest decimal in the first row from the greatest decimal in the second row. 2.9154
- ☐ Add the decimals that have 9 in the thousandths place. 23.1284
- ☐ Add the decimals that when rounded to the nearest one are 7. 21.7079
- ☐ Subtract the decimal closest to 7 from the decimal closest to 9. 1.8561
- ☐ Add the decimals that are to the hundredths place. 10.51
- ☐ Subtract the decimal that when rounded to the nearest tenth is 9.1 from the decimal closest to 13. 3.909

Camping Math

1. All the trailer sites are taken. How much is this income for one day?
\$1425.
2. 209 tent sites are taken. How much is this income for one day?
\$1306.25
3. You rent a canoe from 10:30 A.M. to 3:30 P.M. How much do you pay?
\$12.50
4. 85 trailer sites are taken and 192 tent sites are taken. How much is this income for one day?
\$2007.50
5. You rent a trailer site for four days. How much do you pay?
\$38.
6. You rent a tent site for one week. How much do you pay?
\$43.75
7. You rent a canoe from 9 A.M. to 5 P.M. How much do you pay?
\$15. (daily max.)
8. The camp is full. How much is the income from the sites for one day?
\$2831.25

Patterns

Calculate each product in the first row. Study the pattern. Find each product in the second row without calculating. Check using your calculator.

1. A. $49 \times 51 = \underline{2499}$ $31 \times 29 = \underline{899}$ $79 \times 81 = \underline{6399}$
 B. $19 \times 21 = \underline{399}$ $61 \times 59 = \underline{3599}$ $91 \times 89 = \underline{8099}$

2. A. $73 \times 67 = \underline{4891}$ $17 \times 23 = \underline{391}$ $47 \times 53 = \underline{2491}$
 B. $27 \times 33 = \underline{891}$ $83 \times 77 = \underline{6391}$ $63 \times 57 = \underline{3591}$

3. A. $45 \times 55 = \underline{2475}$ $15 \times 25 = \underline{375}$ $75 \times 65 = \underline{4875}$
 B. $35 \times 45 = \underline{1575}$ $95 \times 85 = \underline{8075}$ $35 \times 25 = \underline{875}$

4. A.

\times	16	45	24	99	75	37
201	3216	9045	4824	19899	15075	7437

B.

\times	22	49	62	89	73	48
201	4422	9849	12462	17889	14673	9648

5. A.

\times	33	333	3333	33333	66
37	1221	12321	123321	1233321	2442

B.

\times	666	6666	99	999	9999
37	24624	246642	3663	36963	369963

Circles

The **circumference** and the **diameter** of four objects have been measured. Each measurement is given to the nearest tenth of a centimetre. Complete the chart.

Object	Circumference C	diameter d	$C \div d$
wastepaper container	77.0 cm	24.5 cm	3.142 857 1
kettle base	63.5 cm	20.2 cm	3.143 564 3
juice can	33.2 cm	10.6 cm	3.132 075 4
bowl	56.6 cm	18.0 cm	3.144 444 4

$C \div d$ is an important value.

It is represented by π (read pī).

π is approximately 3.14.

Did you find $C \div d$ to be close to 3.14? yes

If you know either the diameter or the circumference of a circle, you can find the other measure.

$$\text{Since } \pi = \frac{C}{d}, \text{ then } C = \pi \times d$$

$$\text{and } d = C \div \pi.$$

Solve each problem. Round answers to the nearest hundredth.

- The diameter of a basketball hoop is 46 cm. Find the circumference.
144.44 cm
- The circumference of a mirror is 72 cm. Find the diameter.
22.93 cm
- The circumference of a clock face is 96 cm. Find the diameter.
30.6 cm
- The diameter of a watch face is 2.2 cm. Find the circumference.
6.91 cm
- The diameter of a round table top is 98 cm. Find the circumference.
307.72 cm
- The circumference of a dinner plate is 82 cm. Find the diameter.
26.11 cm

Powers

3^4 is the fourth **power** of 3.

3^4 means $3 \times 3 \times 3 \times 3$.

4 is the **exponent**.

An exponent shows how many times a number is used as a factor.

Enter this program. Above each $\boxed{=}$ print what the display shows.

\boxed{C} $\boxed{2}$ $\boxed{\times}$ $\boxed{=}$ $\boxed{=}$ $\boxed{=}$ $\boxed{=}$

4 8 16 32

2, 4, 8, 16, 32 are the first five powers of 2.

Use this program to find the first six powers of each number.

2 2, 4, 8, 16, 32, 64

3 3, 9, 27, 81, 243, 729

4 4, 16, 64, 256, 1024, 4096

5 5, 25, 125, 625, 3125, 15 625

6 6, 36, 216, 1296, 7776, 46 656

7 7, 49, 343, 2401, 16 807, 117 649

8 8, 64, 512, 4096, 32 768, 262 144

9 9, 81, 729, 6561, 59 049, 531 441

Calculate each power.

1. $10^5 =$ 100 000 2. $25^4 =$ 390 625 3. $3^7 =$ 2187

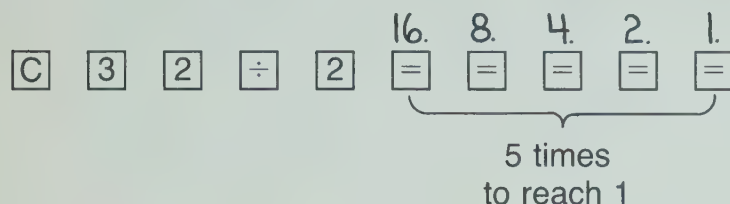
4. $35^3 =$ 42 875 5. $13^6 =$ 4 826 809 6. $7^8 =$ 5 764 801

7. $2^{12} =$ 4096 8. $3^{10} =$ 59 049 9. $1^9 =$ 1

Expressing Numbers as Powers

Recall $32 = 2^5$.

We can express some numbers as powers.



We used the division constant to divide 32 by 2 five times. $32 = 2^5$

Complete each statement.

1. $81 = 3^{\underline{4}}$
2. 2401 is the fourth power of 7.
3. $262\ 144 = 8^{\underline{6}}$
4. 3125 is the fifth power of 5.
5. $3375 = 15^{\underline{3}}$
6. 2048 is $2 \times \underline{2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2}$.
7. $531\ 441 = 3^{\underline{12}}$
8. 16 384 is $4 \times \underline{4 \times 4 \times 4 \times 4 \times 4 \times 4}$.
9. $46\ 656 = 6^{\underline{6}}$
10. 2 097 152 is the seventh power of 8.
11. $59\ 049 = 9^{\underline{5}}$
12. 161 051 is $11 \times \underline{11 \times 11 \times 11 \times 11}$.
13. $248\ 832 = 12^{\underline{5}}$
14. 9 765 625 is the tenth power of 5.
15. $524\ 288 = 2^{\underline{19}}$
16. 16 807 is $7 \times \underline{7 \times 7 \times 7 \times 7}$.
17. $117\ 649 = 7^{\underline{6}}$
18. 15 625 is the sixth power of 5.
19. $262\ 144 = 4^{\underline{9}}$
20. 6561 is $3 \times \underline{3 \times 3 \times 3 \times 3 \times 3 \times 3 \times 3}$.
21. $1296 = 6^{\underline{4}}$
22. 35 831 808 is the seventh power of 12.
23. $43\ 046\ 721 = 9^{\underline{8}}$
24. 262 144 is the sixth power of 8.

Percent

55% of the 840 students at Bright Day School are girls. How many girls are there?

$$\begin{aligned} & 55\% \text{ of } 840 \\ &= \frac{55}{100} \times 840 \\ &= 462 \end{aligned}$$

or $\boxed{C} \ 55 \ \boxed{\times} \ 840 \ \boxed{\%} \ \underline{462}$

The $\boxed{\%}$ key saves the steps of dividing by 100 and pressing $\boxed{=}$.

There are 462 girls at Bright Day School.

Use the $\boxed{\%}$ key to solve each problem.

1. Partly skimmed milk is 2% butterfat. In 3 L of partly-skimmed milk, how much butterfat is there?
0.06 L
2. A football stadium holds 15 400 people. At one game 85% of the seats were taken. How many people were there?
13 090
3. Mani answered 75% of the 40 questions on a test correctly. How many did he answer correctly?
30
4. 40% of a grass seed mixture is alfalfa. In 25 kg of grass seed, how many kilograms of alfalfa are there?
10 kg
5. About 85% of the nuts in a can of mixed nuts are peanuts. How many peanuts would you expect in 200 nuts?
170
6. The junior hockey team lost 30% of the games they played. How many of the next 10 games would you expect them to win?
3

Order of Operations

Program $8 + 75 \div 15$ in two ways.

Do each calculation. Then print the results.

1. $\boxed{C} \boxed{8} \boxed{+} \boxed{7} \boxed{5} \boxed{\div} \boxed{1} \boxed{5} \boxed{=} \underline{5.5333333}$

2. $\boxed{C} \boxed{7} \boxed{5} \boxed{\div} \boxed{1} \boxed{5} \boxed{+} \boxed{8} \boxed{=} \underline{13}$

Are your results the same? no

Mathematicians want one result to be the correct one.
They agree to follow this order of operations.

First, do \times and \div in order from left to right.

Then do $+$ and $-$ in order from left to right.

Which program followed these rules? 2.

Program each expression by following the agreed-upon order.

3. $19 \times 8 + 3$ $\boxed{C} \boxed{1} \boxed{9} \boxed{\times} \boxed{8} \boxed{+} \boxed{3} \boxed{=} \underline{155}$

4. $56 \div 7 + 9$ $\boxed{C} \boxed{5} \boxed{6} \boxed{\div} \boxed{7} \boxed{+} \boxed{9} \boxed{=} \underline{17}$

5. $18 + 72 \div 6$ $\boxed{C} \boxed{7} \boxed{2} \boxed{\div} \boxed{6} \boxed{+} \boxed{1} \boxed{8} \boxed{=} \underline{30}$

6. $108 \div 12 - 5$ $\boxed{C} \boxed{1} \boxed{0} \boxed{8} \boxed{\div} \boxed{1} \boxed{2} \boxed{-} \boxed{5} \boxed{=} \underline{4}$

7. $13 + 14 \times 7$ $\boxed{C} \boxed{1} \boxed{4} \boxed{\times} \boxed{7} \boxed{+} \boxed{1} \boxed{3} \boxed{=} \underline{111}$

8. $24 \times 6 \div 12$ $\boxed{C} \boxed{2} \boxed{4} \boxed{\times} \boxed{6} \boxed{\div} \boxed{1} \boxed{2} \boxed{=} \underline{12}$

9. $84 \div 7 \times 25$ $\boxed{C} \boxed{8} \boxed{4} \boxed{\div} \boxed{7} \boxed{\times} \boxed{2} \boxed{5} \boxed{=} \underline{300}$

10. $34 + 19 \times 11$ $\boxed{C} \boxed{1} \boxed{9} \boxed{\times} \boxed{1} \boxed{1} \boxed{+} \boxed{3} \boxed{4} \boxed{=} \underline{243}$

First Things First

There is another rule about the order of operations that mathematicians agree upon.

Operations within parentheses come first.

Program $(90 \div 30) + 15$ and $90 \div (30 + 15)$.

Do each calculation. Then print the result.

1. $(90 \div 30) + 15$

18

2. $90 \div (30 + 15)$

STEP 1 45

STEP 2 2

Enter STEP 1
result here.

The parentheses make these two different but correct calculations.

Write the three steps for order of operations that you now know.

operations within parentheses

multiplication and division in order from left to right

addition and subtraction in order from left to right

Program each expression.

3. $64 + 16 \div 8$ 66

4. $(64 + 16) \div 8$ 10

5. $(36 + 40) \times 7$ 532

6. $36 + 40 \times 7$ 316

7. $84 \div 7 + 5$ 17

8. $84 \div (7 + 5)$ ¹² 7

Two-Step Calculations

We have seen that some expressions require two steps using your calculator. Show the two steps required for each.

81 \div (20 + 7) STEP 1 27 STEP 2

[C] [2] [0] [+] [7] [=] [C] [8] [1] [\div] [2] [7] [=] 3

99 - (13 \times 4) STEP 1 52 STEP 2

[C] [1] [3] [X] [4] [=] [C] [9] [9] [-] [5] [2] [=] 47

Program each expression. There is only one exercise that does not have two steps.

1. 144 \div (17 + 31) 48

[C] [1] [7] [+] [3] [1] [=] [C] [1] [4] [4] [\div] [4] [8] [=] 3

2. 137 - (13 \times 8) 104

[C] [1] [3] [X] [8] [=] [C] [1] [3] [7] [-] [1] [0] [4] [=] 33

3. 291 - (97 + 78) 175

[C] [9] [7] [+] [7] [8] [=] [C] [2] [9] [1] [-] [1] [7] [5] [=] 116

4. 624 \div (13 \times 6) 78

[C] [1] [3] [X] [6] [=] [C] [6] [2] [4] [\div] [7] [8] [=] 8

5. 272 \div (97 - 89) 8

[C] [9] [7] [-] [8] [9] [=] [C] [2] [7] [2] [\div] [8] [=] 34

6. 115 + (16 \times 9) 259

[C] [1] [6] [X] [9] [+] [1] [1] [5] [=] 259

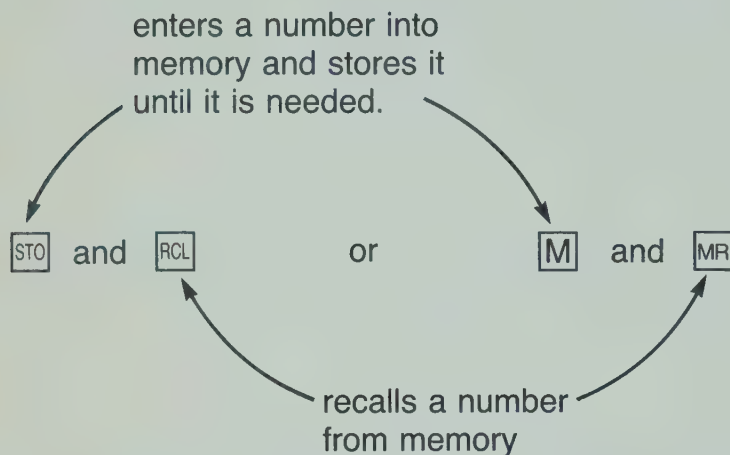
7. 187 - (23 \times 7) 161

[C] [2] [3] [X] [7] [=] [C] [1] [8] [7] [-] [1] [6] [1] [=] 26

Calculator Memory I

Some calculators have a memory. This allows you to do two-step exercises in one step.

If your calculator has two keys for the memory, they are probably these.



Here is the last exercise from page 59.

This time it is done in one step using memory.

$$187 - (23 \times 7)$$

C	2	3	×	7	=	STO	1	8	7	-	RCL	=	26
						or	M				or	MR	

Program exercises 1 to 5 from page 59 in one step using memory.

- | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---------------------|---|---|---|---|----------------------|---|---|
| C | 1 | 7 | + | 3 | 1 | = | ^{or STO} M | 1 | 4 | 4 | ÷ | ^{or RCL} MR | = | 3 |
|---|---|---|---|---|---|---|---------------------|---|---|---|---|----------------------|---|---|
- | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|----|---|----|
| C | 1 | 3 | × | 8 | = | M | 1 | 3 | 7 | - | MR | = | 33 |
|---|---|---|---|---|---|---|---|---|---|---|----|---|----|
- | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|----|---|-----|
| C | 9 | 7 | + | 7 | 8 | = | M | 2 | 9 | 1 | - | MR | = | 116 |
|---|---|---|---|---|---|---|---|---|---|---|---|----|---|-----|
- | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|----|---|---|
| C | 1 | 3 | × | 6 | = | M | 6 | 2 | 4 | ÷ | MR | = | 8 |
|---|---|---|---|---|---|---|---|---|---|---|----|---|---|
- | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|----|---|----|
| C | 9 | 7 | - | 8 | 9 | = | M | 2 | 7 | 2 | ÷ | MR | = | 34 |
|---|---|---|---|---|---|---|---|---|---|---|---|----|---|----|

Calculator Memory II

If your calculator has more than two keys for memory, they are probably these.

M+

adds a number
to memory

M-

subtracts a number
from memory

MR

or

RM

recalls a number
from memory

MC

or

CM

clears
memory

If you have these keys, you must use MC between calculations instead of C.

Try these exercises using this kind of memory.

1. $195 - (17 \times 6)$

MC 1 7 X 6 = M+ 1 9 5 - MR =

93

2. $(16 \times 12) - (19 \times 8)$

MC 1 9 X 8 = M+ 1 6 X 1 2 = - MR =

40

3. $198 \div (14 + 52)$

MC 1 4 + 5 2 = M+ 1 9 8 ÷ MR =

3

4. $(17 \times 11) + (5 \times 18)$

MC 1 7 X 1 1 = M+ 5 X 1 8 = + MR =

277

5. $(18 + 42) \times (13 + 29)$

MC 1 8 + 4 2 = M+ 1 3 + 2 9 = X MR =

2520

6. $(16 \times 23) - (99 \div 33)$

MC 9 9 ÷ 3 3 = M+ 1 6 X 2 3 = - MR =

365

Now try each program leaving out all = except the one at the end.

Quick Memory

3 movie tickets at \$5.25 each.
2 large drinks at \$0.95 each.
1 medium drink at \$0.65 each.
1 large popcorn at \$1.25 each.
2 medium popcorn at \$0.89 each.

How much did this visit to the movies cost.?

With $\boxed{M+}$ this calculation is quick.

\boxed{MC} $\boxed{3}$ $\boxed{\times}$ $\boxed{5}$ $\boxed{\cdot}$ $\boxed{2}$ $\boxed{5}$ $\boxed{M+}$ $\boxed{2}$ $\boxed{\times}$ $\boxed{\cdot}$ $\boxed{9}$ $\boxed{5}$ $\boxed{M+}$
 $\boxed{\cdot}$ $\boxed{6}$ $\boxed{5}$ $\boxed{M+}$ $\boxed{1}$ $\boxed{\cdot}$ $\boxed{2}$ $\boxed{5}$ $\boxed{M+}$ $\boxed{2}$ $\boxed{\times}$ $\boxed{\cdot}$ $\boxed{8}$ $\boxed{9}$ $\boxed{M+}$ \boxed{MR} 21.33

The cost was \$21.33.

\boxed{MR} recalls the sum that has been added to memory. Do not use $\boxed{=}$.

Program a solution to each problem.

1. 7 submarine sandwiches at \$1.95 each.
2 soft drinks at \$0.55 each.
2 milkshakes at \$1.35 each.
How much did this cost?

\$17.45

2. 2 pizzas at \$6.30 each.
3 steak sandwiches at \$2.19 each.
3 cheeseburgers at \$1.75 each.
6 soft drinks at \$0.65 each.
How much did this cost?

\$28.32

3. 4 passes to the park at \$8.50 each.
10 bingo tickets at \$0.50 each.
6 souvenirs at \$2.99 each.
How much did this cost?

\$56.94

4. 5 tickets to the fair at \$1.75 each.
12 rides at \$2.25 each.
8 rides at \$1.50 each.
4 souvenirs at \$1.45 each.
How much did this cost?

\$53.55

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ISBN 0-7702-0859-2